UNITED STATES. CONGRESS. HOUSE

COMMITTEE ON APPROPRIATIONS

Public Works Appropriations

Hearings

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SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES

EIGHTY-FOURTH CONGRESS

FIRST SESSION

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CARSON CULP, *Staff Assistant to the Subcommittee*

[1] Temporarily assigned.

EASTERN SECTION

Part 1

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EASTERN SECTION

Part 1

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PUBLIC WORKS APPROPRIATIONS FOR 1956

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MONDAY, APRIL 25, 1955.

WITNESSES

CORPS OF ENGINEERS

BRIG. GEN. E. C. ITSCHNER, ASSISTANT CHIEF OF ENGINEERS FOR CIVIL WORKS
COL. WILLIAM WHIPPLE, EXECUTIVE FOR CIVIL WORKS, OFFICE OF CHIEF OF ENGINEERS
COL. J. U. ALLEN, ASSISTANT CHIEF OF CIVIL WORKS FOR RIVERS AND HARBORS, OCE
COL. ALFRED D. STARBIRD, ASSISTANT CHIEF OF CIVIL WORKS FOR FLOOD CONTROL, OCE
COL. W. F. POWERS, CHIEF, OPERATIONS DIVISION, CIVIL WORKS, OCE
B. JOSEPH TOFANI, CHIEF OF PROGRAMS BRANCH, OCE
J. R. BRENNAN, PLANNING DIVISION, OCE
E. W. WEBER, SPECIAL ASSISTANT TO ASSISTANT CHIEF OF ENGINEERS FOR CIVIL WORKS

Mr. MARSHALL. The committee will come to order. We are very pleased to have before us Brigadier General Itschner, Assistant Chief of Engineers for Civil Works, and his group to testify on this appropriation bill.

General, there is some general information we would appreciate having a little testimony on before getting into the details of the budget.

PROCEDURE FROM INCEPTION OF PROJECT TO REQUEST FOR FUNDS

First, would you briefly trace a project from its inception to the point where this committee is presented with a request for funds for actual construction?

General ITSCHNER. Mr. Chairman, I shall be as brief as I can. The process is a rather long one.

The first step is the instigation of an investigation by the local people who desire a navigation or a flood-control improvement. Those

local people contact their Representative in Congress with an appeal for provision of corrective facilities.

The Member of Congress then has two different courses of action, depending upon the status of prior studies on the problem. If there have been no previous reports on the stream in the general vicinity of the current problem, he can do one of two things: Either have the Public Works Committee insert an item in an omnibus rivers and harbors and flood-control bill authorizing the Chief of Engineers to make a preliminary examination and survey of the stream in question, or he may introduce separate legislation to cover the same items. If there has been a previous report on this stream in the general vicinity of the current problem he merely has to go to the Public Works Committee and have the committee adopt a resolution calling upon the Board of Engineers for Rivers and Harbors to review previous reports in the same area made in the interest of navigation, flood control, or allied purposes with a view to determining whether any modifications of the recommendations in the previous reports are advisable.

Now, upon the passage of a bill authorizing this preliminary examination and survey or the adoption of a resolution by the Public Works Committee, the Chief of Engineers refers the report to the division and district engineers in whose territory the stream in question is located for accomplishment of the report.

Now, assuming that funds are appropriated to cover the study, which must be done by separate appropriative action, the district engineer, in order to obtain the views of the local interests, holds a public hearing as early in the process of preparing this report as possible. He then analyzes the data obtained from the local interests and compiles data obtained through an extensive field investigation, and devises a plan of improvement best suited for the particular problem.

He usually holds another public hearing at the time when his solution has been largely crystallized and several plans perhaps are available to him, so that he can obtain the views of the local interests as to which of the plans should be recommended.

Upon completion of the report, it is submitted through the division engineer to the Chief of Engineers for review. A public notice is then issued by the division engineer to all parties known to be interested in the investigation. It sets forth officially the findings of the district engineer and his recommendation for improvement of the locality in question. It advises those concerned that they may appear before the Board of Engineers for Rivers and Harbors to present their views in the matter.

The Board of Engineers for Rivers and Harbors then, after suitable study, holds a public hearing in Washington, D. C., or in the locality; generally in Washington, unless there is some particular problem.

The Board makes it recommendations to the Chief of Engineers, who then submits the report to the governors of the States and interested Federal agencies, for their comments; these comments then form a part of the report when it is transmitted to Congress and published. The Chief of Engineers then submits the report to the Director of the Bureau of the Budget for a determination as to the relationship of the report to the program of the President. The report, together with all comments including those of the Bureau of the Budget, is then submitted to the Congress through the Secretary of the Army.

The Committees on Public Works of the Senate and the House then hold hearings at various times on the reports submitted to them with a view toward formulating a river and harbor and flood-control bill. After authorization of the improvements by the Congress the Chief of Engineers in his annual budget estimate requests funds with which to accomplish the planning and the construction of these projects.

That, I believe, sir, brings us up to the time when your committee obtains these budget requests, which, of course, go through the Secretary of the Army and the Director of the Bureau of the Budget to Congress.

BENEFIT-COST RATIO

Mr. MARSHALL. The project's so-called benefit-cost ratio is quite important in considering appropriations. Would you tell us just how these ratios are calculated? How often are they adjusted to keep them up to date? In general, how can we be assured that they give us a reasonably true picture?

General ITSCHNER. The benefit-to-cost ratio is a device for measuring the worth of a project, and it is calculated in the following manner: It has two parts, both benefits and costs, and I shall take up the cost element first.

The cost of a project is determined from engineering design and cost estimates. This is converted to an annual charge by multiplying the cost by the interest and amortization rate. The interest rate for the Federal share is based on the long-term borrowing rate of the Federal Government. At present it is 2½ percent. Whatever non-Federal share there may be is computed with an interest rate representing the amount that it is probable they will have to pay for any loan to accomplish the project. At present that will be anywhere from 2½ to 4 percent. The cost of maintenance and operation is included.

As for the benefits, they are computed on the basis of flood damage prevented, enhancement of land values, transportation savings through the navigation improvement, the value of hydroelectric power, and all other items that might be considered benefits for a particular project, on a monetary basis. These are converted if necessary to an average annual amount in total. The sum of the total annual average benefits is divided by the total average annual cost and the resulting ratio is called the benefit-to-cost ratio.

If the benefit-to-cost ratio is greater than one the project is considered to be economically justified. If it is less than one the project is considered not to be economically justified on the basis of monetary values. But at times—and those times are rare—there might be other factors involved of an intangible nature which might justify a project which does not have a favorable benefit-to-cost ratio; for instance, the saving of life or something of that sort which cannot be evaluated from a monetary standpoint.

You asked the question, I believe: How often are they adjusted?

Mr. MARSHALL. Yes.

General ITSCHNER. The benefit-to-cost ratios are originally computed in the basic survey report which is submitted to Congress. If the report is favorable they are recomputed and brought up to date at the time the authorization is sought before the Public Works Committee. There might at times be a period of several years in there. In

some reports there was a lapse of 4 years between the time the reports were submitted and the omnibus bill was held.

They are brought up to date at that time and thereafter they are brought up to date at the time the initial budget estimate is submitted and they are brought up to date every year that funds are requested.

You asked whether they give a true picture. It is generally considered by all Government agencies engaged in water resources development that there is no better way to indicate the economic feasibility of a project than the benefit-to-cost ratio. I could elaborate on that, but I think that we feel that it is the best method we have; that if it is used conservatively it is a good method of determining the value of a project.

LEGAL REQUIREMENTS AND PRACTICES IN REGARD TO LOCAL CONTRIBUTIONS

Mr. MARSHALL. I have noticed that there are some projects where there is no local contribution and that for others the local contributions amount to over half of the total project cost. What are the legal requirements and the corps practices under the law?

General ITSCHNER. In answering that question, Mr. Chairman, I should like to divide it into two parts.

The local cooperation required on the general run of projects for navigation and flood control and their statutory provisions for beach-erosion projects, which are more specific and quite different, are the two parts.

For navigation we would have to look to the act of 1920; section 547, title 33, United States Code, section 2 of the Rivers and Harbors Act of June 5, 1920, for a legal background. That law provides that every report submitted to Congress in pursuance of any provision of law for a survey in addition to other information which the Congress has directed shall contain a statement of special or local benefits which will accrue to localities affected by such improvement and a statement of general or national benefit with recommendations as to what local cooperation should be required, if any, on account of such special or local benefit.

For flood-control projects we have different legislative background. Section 701C of title 33, United States Code, originally enacted in section 3 of the Flood Control Act of June 22, 1936, provided:

> No money shall be expended on the construction of any project until States, political subdivisions thereof, or other responsible local agencies have given assurances satisfactory to the Secretary of the Army that they will (a) provide without cost to the United States all lands, easements and rights-of-way necessary for the construction of the project except as otherwise provided herein, (b) hold and save the United States free from damages due to the construction works, and (c) maintain and operate all of the work after completion in accordance with regulations prescribed by the Secretary of the Army.

To this day we refer to those requirements as our ABC requirements throughout all flood-control acts. There was a modifying act, however, in 1938; section 2 of the Flood Control Act of June 28, 1938, which has been incorporated into section 701C–1 of title 33, United States Code, which reads:

> That in the case of any dam and reservoir project or channel improvement or channel rectification project for flood control herein authorized or heretofore authorized title to all lands, easements, and rights-of-way for such project shall

be acquired by the United States and the provisions a, b, and c of section 3 of said Act of June 22, 1936, shall not apply thereto.

That act, as you see, nullified the provisions of the 1936 act with respect to the ABC requirements. But again, in 1941 that was changed. Section 2 of the Flood Control Act of August 18, 1941, read:

That section 3 of the Act approved June 22, 1936—

which was that original section that I gave to you—

as amended by section 2 of the Act approved June 28, 1938, shall apply to all works authorized in this Act except that for any channel improvement or channel rectification project provisions A, B, C of section 3 of said Act of June 22, 1936, shall apply thereto.

You will notice that the provisions of A, B, and C apply to the flood-control channel improvements or channel rectification works but omit reference to reservoir projects, so therefore they do not apply to the reservoir projects.

Subsequent flood-control acts have contained similar language. Accordingly the current legislative policy on flood-control projects is that in general no local cooperation is required on reservoir projects and on all other projects conditions A, B, and C apply.

LAND POLICY

Mr. MARSHALL. We continually hear discussions about the cost of and amount of land that the Federal Government continues to acquire. Would you tell us what your policies are concerning land acquisitions in connection with these projects?

General ITSCHNER. Mr. Chairman, before answering that question, which I shall do immediately, I wonder if you would like to have inserted in the record a statement of the beach erosion local cooperation requirements, rather than for me to read it here?

Mr. MARSHALL. We would appreciate that. Without objection that will be placed in the record.

(The information is as follows:)

BEACH EROSION COOPERATIVE STUDIES

Beach erosion cooperative studies were authorized by Public Law 520, 71st Congress (River and Harbor Act of July 3, 1930), supplemented by section 3, Public Law 166, 79th Congress. Public Law 520 states: "*Provided*, That no money shall be expended under authority of this section in any State which does not provide for cooperation with the agents of the United States and contribute to the project such funds and/or services as the Secretary of War may deem appropriate and require."

By an early Executive order an appropriate local contribution was determined to be 50 percent, and it has remained this amount ever since.

CONSTRUCTION OF SHORE PROTECTION WORKS

Federal participation in the construction of shore protection works was authorized by Public Law 727, 79th Congress, in 1946. It provided that the Federal contribution to the cost of shore protection works authorized as a result of favorable beach erosion cooperative studies would be limited to one-third of the cost of (*a*) protecting publicly owned shores, and (*b*) repair of publicly owned seawalls, based on the original cost of said walls, where the walls were erected to prevent erosion of public highways considered by the Chief of Engineers to be sufficiently important to warrant such protection.

General ITSCHNER. With respect to our real-estate acquisition policy, we have a policy at the present time that was agreed to with the Department of the Interior and is applicable to the projects of both agencies. It states that lands will be acquired in fee in the following cases:

Lands necessary for permanent structures. Lands below the top of the pool elevation for storing water for navigation, power, irrigation, and other conservation purposes. In general, fee title will be acquired to all land 300 feet horizontally from the edge of the conservation pool such as I have just described for navigation, power, irrigation, or other conservation purposes. However, in those projects where the topography is precipitous or where it is unusually flat and where such discretionary action is desirable, fee title may be acquired to those lands which are included in the 5-year flood frequency rather than 300-foot horizontally.

Actually, the Corps of Engineers uses the 5-year flood frequency criterion almost exclusively. The Bureau of Reclamation on the other hand tends towards using the 300-foot horizontally criterion.

Additional lands which may be needed to provide for limited public use and seasonable access to the water surfaces of the reservoir may be acquired in fee. Fee title may also be acquired where it is to the financial advantage to the Government rather than the acquisition of an easement.

Now, as far as easements are concerned, all other lands required for the purposes of projects are acquired by easement. They include additional reservoir lands needed for flowage in reservoir areas in addition to the fee; lands in reservoir areas of navigation-only projects; lands in reservoir areas of flood control-only projects which do not provide conservation pools; lands required for relatively short times during the construction of a project so that they can be turned back to private use; lands may be acquired in easement in the zone in the conservation pool in remote areas of the reservoir; or lands which were frequently inundated in the past.

In addition to that, the normal real estate practices of blocking out lands are used where it is advantageous to do so. Mineral rights as well as oil and gas rights are generally not acquired provided the owner subordinates the exploration and exploitation to the prior right of the Government to operate and maintain the project.

That very briefly summarizes, sir, the current real estate policy.

FUNCTIONS OF RIVERS AND HARBORS BOARD AND BEACH EROSION BOARD

Mr. MARSHALL. In connection with your navigation and beach erosion projects there is frequently reference to a Rivers and Harbors Board and a Beach Erosion Board. Would you tell us just what these boards are and about their function and importance in this program?

RIVERS AND HARBORS BOARD

General ITSCHNER. Yes, sir. Let me start with the Rivers and Harbors Board. The Rivers and Harbors Board is officially called the Board of Engineers for Rivers and Harbors. It is a permanent body created by the Rivers and Harbors Act of 1902. At the present time

it consists of seven senior officers of the Corps of Engineers appointed by the Chief of Engineers. The resident member is specifically assigned to that position and has no other duties. The remainder of the Board have other duties in addition to their membership on the Board.

The Board has a civilian staff consisting of engineers, economists, and administrative personnel.

The principal functions of the Board, as prescribed in law, are: First, to conduct an independent review of all preliminary examinations, survey and review reports prepared by the Corps of Engineers, except those for which the Mississippi River Commission is responsible, and those reports are reviewed by the Mississippi River Commission. The second function is to prepare reports and recommendations to the Chief of Engineers as a result of such reviews. Third and last, to consider and approve general plans for modification and reconstruction of locks, dams, and other navigation improvements.

BEACH EROSION BOARD

Now, the Beach Erosion Board was established in 1930 by Congress to consist of 7 members, 4 officers of the Corps of Engineers and 3 civilians. The act creating the Beach Erosion Board also authorized that Board to make cooperative beach erosion studies and reports, and prescribed the procedure for making these studies and reports.

The Beach Erosion Board carries on studies of specific beach erosion problems in the cooperative studies program and general investigations and research into beach erosion matters. When authorized by Congress the Board prepares at Federal expense beach erosion control reports on areas in which the interest is solely on Federal property.

The Board is the only organization of its kind and has become the acknowledged authority on beach erosion and shore protection matters.

The Board meets 3 to 5 times a year, usually at the site of some outstanding beach erosion problem under study. Its interim operations are carried on by the staff in Washington under the direction of its president, who is the senior of the officers of the Corps of Engineers appointed to the Board.

There is really no connection directly between the two boards, although they may use all information developed by the other board.

NEW ENGLAND AREA

Mr. MARSHALL. The first area that we will take up is New England. For this area a total sum of $10,791,650 is requested for 1956. We will insert the table from the justifications which shows a summary breakdown of this amount in the record at this point.

(The information is as follows:)

NEW ENGLAND

Budget estimate, fiscal year 1956, Corps of Engineers

General investigations	$79,250
Advance engineering and design	315,000
Construction	5,900,000
Operation and maintenance	4,497,400
Total	10,791,650

Unobligated and Unexpended Balances

Mr. Marshall. We will insert a table that the committee has requested the corps to furnish showing the unobligated balances of funds to the credit of each construction project in this area, in the record at this point.

(The information is as follows:)

New England Basin

Project	June 30, 1954		Mar. 31, 1955		June 30, 1955 (estimated)	
	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance
Navigation:						
Housatonic River	0	----------	$393,711	$393,716	0	$100,000
Portland Harbor	$90,000	$90,000	760,280	760,280	$15,000	70,000
Mystic River	0	0	0	0	0	0
Portsmouth Harbor	0	0	0	0	0	0
Shore protection:						
Hammonasset Beach	0	0	0	0	0	0
Winthrop Beach	0	0	0	0	0	0
Hampton Beach	0	0	0	0	0	0
Flood control:						
Hartford (Folly Brook)	0	0	0	0	0	0
Adams, Mass	−9,484	−9,484	123,130	455,688	0	0
North Adams, Mass	[1] 3,071	[1] 3,071	[1] 1,890	[1] 1,890	[1] 0	[1] 0

[1] Includes $32,000 loaned to project.

Mr. Marshall. I believe you have an overall statement, General?

General Itschner. We do have an overall statement, sir, and I should like to ask, if I may, for permission, to have Colonel Allen, the Assistant Chief of Civil Works for Navigation, present that statement.

Mr. Marshall. We will be glad to hear from you, Colonel.

General Statement

Colonel Allen. The New England major drainage area includes all of the States of Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut; those portions of the States of Vermont and New York which drain into the Connecticut and Housatonic Rivers and the Hudson River above New York City; and Long Island (exclusive of New York City). The present development of the region varies from the forested wilderness in the northern and central portions of Maine to the manufacturing and urban areas nearer the coast which are highly developed in Massachusetts, Rhode Island, Connecticut, and New York.

Problems arising from the needs of commercial navigation and from the occurrence of floods are of major significance. Commercial navigation provides the vital coal and petroleum products and much of the raw materials required by the intensively developed urban and industrial centers. The waters off the New England coast are one of the principal sources of the country's fish and shellfish supply and the fishing industry is closely related to the development of small boat harbors as well as major ports. Economic losses resulting from flooding have become increasingly severe, particularly in the industrial communities in the lower portions of the Merrimack, Blackstone, Thames, Connecticut, and Housatonic River Basins. Flooding consti-

tutes a threat to defense production as well as to the regional and national economy. The beaches of the area provide a natural playground for the people of the heavily populated urban areas and recreational development of the coastal towns has become an important part of the New England economy. The intense recreational development of the coastal areas makes the erosion of beaches a particularly serious economic problem.

Hurricane attacks are becoming a serious problem. Three 1954 hurricanes caused considerable damage in the New England-New York region, especially damage resulting from coincidental tidal flooding and interior river flooding. Total lives lost in the 3 hurricanes is reported to be more than 775. In the 1938 hurricane more than 500 persons lost their lives. These hurricanes have led to numerous requests for the protection of industrial, commercial, and residential areas against tidal flooding. Measures to provide protection against this type of damage considerably broadens the scope of existing legislation. Many bills have been introduced in Congress calling for a preliminary examination and survey of the problem. The Senate Public Works Committee is scheduling hearings on these bills and the Corps of Engineers has been requested to testify.

Pollution abatement: Pollution of the streamflow particularly during low-water periods, becomes a problem whenever industrial and other developments become extensive. Since the quality of water in a stream is also a function of water resource development and potentialities, the Corps of Engineers is interested in measures adopted to control stream pollution. In the New England area, the various communities, under the aegis of the United States Public Health Service and the State agencies concerned, are gradually providing treatment measures for their wastes. The problem has been discussed in the comprehensive study of the New England-New York Interagency Committee report on the resources of the region.

The principal needs of the area are: The deepening of channels to make possible the more economical delivery of fuels and other products; the provision of safer channels and more protected harbors for fishing and pleasure boats; the protection of agricultural, industrial, and urban areas against the threat of future damage from floods; and the prevention of damage and destruction of the beaches.

NAVIGATION

Since the beginning of Federal improvement a total of 178 river and harbor projects have been authorized to provide for the growing demands of commerce and navigation in the New England major drainage area. These include 16 deep-water projects with improved depths of 25 feet or more and 162 projects of lesser depth—122 of the 178 authorized projects have been completed.

The remaining 56 projects are in various stages of completion with 2 under construction. These are the Housatonic River, Conn., and Portland, Maine; both of which projects were initiated with funds appropriated in fiscal year 1955.

New starts in the program for fiscal year 1956 provide for initiation of the work at Portsmouth Harbor, N. H., and at Mystic River, Mass., on a continuing basis.

FLOOD CONTROL

The overall authorized program for the control of floods in the New England major drainage area includes 36 active projects—18 reservoirs and 18 local protection works. These works are located in five different river basins—the Merrimack, Blackstone, Thames, Connecticut, and Hudson. Nine reservoirs and thirteen local protection works have been completed. Nine reservoirs and five local protection projects have not yet been completed, including four partially completed local projects. Local works are now under construction on the Hoosic River at Adams and North Adams, Mass. The new start proposed for fiscal year 1956 is the Folly Brook unit of the local protection work at Hartford, Conn. This project will provide much needed protection for a heavily populated urban area.

BEACH EROSION CONTROL AND SHORE PROTECTION

Projects have been adopted for beach erosion control and shore protection at 22 beach areas in the States of New Hampshire, Massachusetts, Rhode Island, and Connecticut. An appropriation has been made previously for the Federal share of the cost of one project which was completed by local interests in Connecticut. Local interests, at their own expense, have initiated, or are planning to initiate construction on a number of these projects. Federal funds have been requested for appropriation during fiscal year 1956 as the Federal share of the cost of three projects.

In accordance with provisions in the Flood Control Act of 1950 and by direction of the President of the United States, the New England-New York Interagency Committee has made a survey of the land and water resources and related matters in the general area comprising the States of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. A comprehensive report will be submitted to the President and will include recommendations of plans and programs to serve as guides for development, utilization, and conservation of these resources. The report is now before the Federal agencies and the Governors of the States participating in the preparation of the report for official comment.

CONCLUSION

With the present growth in population, commerce, and industry in the New England major drainage area, the control and improvement of the natural features and resources of the area are vital to the continued expansion of its economy. Increasing fuel consumption for heat and power and the import of raw material to supply expanding industrial needs place increasing demands on navigation facilities. Improved harbors and channels are required. Provision should be made for the control of future floods to minimize economic losses, enhance the general welfare, and assure continued operation of the many industrial plants essential to the national defense. To maintain the recreational usefulness of the beaches and sustain the economy of coastal towns, it is imperative that erosion be arrested. The needs of small fishing operations and recreation boating can best be satisfied by the improvement of small-boat harbors.

The requested appropriations for continuing work and new starts planned for fiscal year 1956 will permit the orderly progression of the overall program necessary to meet the present needs of navigation, flood control, and beach erosion.

COMPLETION OF STUDIES

Mr. TABER. When do you anticipate that the overall study in New England and New York and so forth will be available?

General ITSCHNER. The New England-New York report, sir, is at the present time in the hands of the committees interested in that report in Congress. It is available now, sir.

If you would like any particular copies, sir, we would be glad to provide them for your personal use. I imagine you would be particularly interested in those in New York.

It is an extremely voluminous report. It weighs 150 pounds or something like that, in some 40 volumes. It is very large, but if you would like the New York section of it, sir, we could provide that portion for your use.

Mr. TABER. I do not believe I want all of that. Off the record.

(Discussion off the record.)

GENERAL INVESTIGATIONS

Mr. MARSHALL. The first activity is "General investigations." $79,250 is requested for 12 studies in the New England area. We will insert in the record the tentative allocations by projects, which appears on pages 1, 2 and 3.

(The information is as follows:)

NEW ENGLAND DRAINAGE AREA

JUSTIFICATION OF ESTIMATE

1. Examinations and surveys

(*a*) *Navigation studies.*—The amount of $49,000 is requested for completion of nine studies in the New England drainage area.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Connecticut: Greenwich Cove	$7,400	$4,700	$2,700	0
Maine:				
Bar Harbor	12,900	9,200	3,700	0
Pepperell Cove	1,800	0	1,800	0
Massachusetts:				
Cape Cod Canal	35,800	25,800	10,000	0
Cotuit Harbor	24,600	16,100	8,500	0
New Bedford and Fairhaven Harbor	11,200	8,900	2,300	0
New Hampshire: Hampton River and Harbor	1,500	400	1,100	0
New York: Moriches and Shinnecock Inlets	39,000	22,600	16,400	0
Rhode Island: Apponaug Cove	2,500	0	2,500	0
Total	136,700	87,700	49,000	0

(*b*) *Flood control studies.*—None.

(*c*) *Beach erosion cooperative studies.*—The amount of $30,250 is requested for completion of these beach erosion studies in the New England drainage area.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Maine: Saco Bay	$3,500	$0	$3,500	0
Massachusetts: Chatham	7,500	3,150	4,350	0
New York: Fire Island Inlet to Montauk Point (Suffolk County), Long Island	25,000	2,600	22,400	0
Total	36,000	5,750	30,250	0
Grand total	172,700	93,450	79,250	0

Mr. MARSHALL. Would you explain briefly the activities that are covered by these funds?

Colonel ALLEN. These 9 studies which are listed under "Navigation studies" and 3 under "Beach erosion studies" provide for the continuation of the survey program in New England. Of the 9 navigation studies which are funded the funds requested in 1956 will complete all 9. Of the three beach erosion studies funded there will be a like amount of funds provided by local interests.

In the case of beach erosion studies the local interests contribute 50 percent of the cost of the survey. That sum is matched by the Federal Government and produces a cooperative study which is used later as the basis for authorization, if a favorable report results.

BASIS FOR ESTIMATES

Mr. MARSHALL. Colonel, on what are the 1956 estimates based?

Colonel ALLEN. The 1956 estimates are based on the current estimate of our field offices of the funds required to complete the outstanding survey. In each case the estimate applies to that survey.

Mr. MARSHALL. For the purpose of illustration, assuming that the committee allowed the full amount of the total request, how firm would you consider the allocation for each project to be? In other words, might you deviate from the individual allocation; and, if so, on what basis?

Colonel ALLEN. As these surveys progress throughout the year some surveys show likelihood of being completed with less funds than are available. Other surveys as we progress indicate that some additional funds may be required. In that case the commitment to the study of the actual dollar value shown here is not firm, but discretion is permitted in order to bring the studies to completion as required.

PREVIOUS ALLOCATIONS

Mr. TABER. The allocations for all of these projects prior to 1956 were made last year; were they not?

Colonel ALLEN. Not all in 1955; no, sir. They were in years prior to 1956. That is the summation of allocations up to this fiscal year.

Mr. TABER. The entire requirement for each one of these projects seems to be recommended to us.

Colonel ALLEN. That is the entire requirement to complete these studies; yes, sir. These studies were requested and funds requested will complete them in 1956. There will be no further fund requests for these nine navigation studies.

CAPE COD CANAL

Mr. TABER. Let us take the Cape Cod Canal. Was all that is shown as being allotted prior to 1956 provided for in the current fiscal year?

Colonel ALLEN. No, sir; that study of the Cape Cod Canal has been going on for a number of years and has been financed piecemeal over several years. This year's allocation of $10,000 will complete it.

Mr. TABER. That is the big one on that page.

MORICHES AND SHINNECOCK INLETS

What is the Moriches and Shinnecock Inlets project?

Colonel ALLEN. The Moriches and Shinnecock Inlets are on the south shore of Long Island, sir.

Mr. TABER. Was that a new project last year?

Colonel ALLEN. No, sir. Up through last year there had been $22,600 made available, prior to 1954. There were no funds in 1954 or 1955.

Mr. TABER. Is that a navigation project?

Colonel ALLEN. Yes, sir.

Mr. TABER. Have you checked up on it since the hurricane last fall?

Colonel ALLEN. As a matter of professional interest the Beach Erosion Board was quite interested in that, aside from the navigation study, because they had an inlet that continually closed up, broke open, and closed up again. Out of general investigation money the Beach Erosion Board conducted some studies and surveys both prior to and after the hurricane to see what happened in these inlets where they had a terrific tidal prism that was closed off and then eventually broke open again.

Mr. TABER. There was one place out toward Montauk where there was great interest in a project for opening up of channels. After the hurricane was over the channels were all open. I am wondering if you are up to date on what the situation is there on these two projects, because if it is all done we do not want to get into it.

Colonel ALLEN. Well, sir, in the case of the Moriches and Shinnecock Inlets it is more than opening the channel. It is a case of structures to maintain the channel. The State of New York has done considerable work. There is a large amount of sand in motion on the south shore of Long Island which has a tendency to continually shoal up the channels. We have no desire to construct where the maintenance costs are going to be unnecessarily high. In this survey it will be necessary to determine whether it is economically feasible for the Federal Government to construct or extend jetties or so provide a channel that the maintenance cost will be minimized. Of course, the history of the inlet over the years is always considered when these projects are surveyed and reported upon.

Mr. TABER. That is all.

ADVANCE ENGINEERING

Mr. MARSHALL. The next item we have for consideration is "Advance engineering," for which $315,000 is requested. We will insert at this point in the record the statistics from pages 4, 5, and 6 which give us the tentative allocations by projects.

(The information is as follows:)

NEW ENGLAND

JUSTIFICATION OF ESTIMATE

Advance engineering and design

Funds in the amount of $315,000 will be applied to "Advance engineering and design" on 3 flood control projects in New England drainage area. Those 3 projects, with a total estimated cost of $9,320,000, will be brought to the stage where construction can be initiated.

Project	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Navigation projects: None				
Flood control projects:				
Massachusetts: Buffumville Reservoir	$2,640,000	$140,000	$55,000	[1] $2,445,000
New Hampshire: Otter Brook Reservoir	4,800,000	100,000	160,000	[1] 4,540,000
Rhode Island: Woonsocket	1,880,000	25,000	100,000	[1] 1,755,000
Total flood control	9,320,000	265,000	315,000	8,740,000
Multiple-purpose projects including power: None				
Reexamination of projects in "Deferred for restudy" category: None				
Grand total, advance engineering	9,320,000	265,000	315,000	8,740,000

[1] Sufficient planning funds will be available with the fiscal year 1956 request for the necessary preconstruction planning prior to requesting funds for construction.

Mr. MARSHALL. Would you define the term "advance engineering and design" and explain to us the difference between these activities and those carried on under general investigations?

Colonel STARBIRD. After a project is authorized but prior to the time construction funds are requested certain design work is necessary to establish the final details of the structure and to prepare plans and specifications so that construction can be initiated by contract award or otherwise. By advance-planning money we mean that money which is required to accomplish the planning after authorization but prior to the initiation of construction.

Mr. MARSHALL. Do you know of any serious opposition to any of the projects you have listed?

Colonel STARBIRD. I know of no serious opposition to any of these three, sir.

BUFFUMVILLE

Mr. MARSHALL. As I understand it, the benefit-to-cost ratio for the system of 4 reservoirs, of which Buffumville is a part, is 1.5 to 1. What is the ratio for Buffumville itself?

Colonel STARBIRD. Those reservoirs, sir, will act together as a whole to effect the benefit. All four are considered as essential, and a separate benefit-to-cost ratio has not been computed because of the interrelationship of the reservoirs concerned.

Mr. MARSHALL. Could you indicate this to us on the map?

Colonel STARBIRD. Yes, sir. It is on the tributary of the Thames River, sir, right here [indicating]. This [indicating] is the Thames.

Actually, there are a series of four authorized reservoirs on several small tributaries, namely, Mansfield Hollow Reservoir, East Brimfield, Hodges Village, and Buffumville, which are contemplated under present plans for this basin. One of these is above Buffumville.

Mr. MARSHALL. About how big is the radius in which these four are located?

Colonel STARBIRD. I would guess that diameter to be about 50 miles, sir. I can check that.

It is less than that. It is a total of around 30 miles, sir.

Mr. MARSHALL. You figure that as a unit, rather than each of the four separately?

Colonel STARBIRD. That is correct, sir. We figure it as a unit because basically a large portion of the benefits are realized all the way down the main stem of the stream. In this case a large portion of the benefits are clear down in Norwich, which is about here [indicating].

Mr. TABER. Are any of these reservoirs finished?

Colonel STARBIRD. One of these reservoirs is finished, sir. Only one on the Thames is finished, and that is one down in Connecticut on another tributary.

Mr. TABER. Have there been any floods there since the completion of that one?

Colonel STARBIRD. I do not have the exact date of completion.

Colonel POWERS. It is the Mansfield Hollow project which was completed in 1952.

Colonel STARBIRD. As I mentioned, Mansfield Hollow reservoir is basically on another main tributary. The main flooding that occurred here, sir, was in 1936. Two major floods also occurred in 1938.

Mr. MARSHALL. Will there be any benefits from the Buffumville project by itself?

Colonel STARBIRD. Yes, sir; there will be benefits from Buffumville by itself. Assuming no others were constructed I think we could compute and furnish to the Committee the benefit-to-cost ratio of this one as the first one in the system.

Mr. TABER. How much of a job would that be?

Colonel STARBIRD. It would not be very great, sir. Of course, if a second one is built later some of the benefits would shift and go over to the second reservoir. In other words, the 4 together will affect the stream differently. With all 4 of the tributaries coming together it will affect the over-all runover differently from what would happen with one alone, multiplied by, let us say, 4. But we can compute that and furnish it for the record.

Mr. TABER. It would not take more than a few minutes, probably?

Colonel STARBIRD. No, sir; it is a little more than that. We will have to go back to the field and have them make a routing on the reservoir and assume that the others are not there and add up the benefits. We know the costs. I would say we could get it to the committee within 48 hours.

Mr. TABER. Suppose you do that.

(The information is as follows:)

The benefit-to-cost ratio for the Buffumville Reservoir acting in combination with only those works already constructed would be 1.9 to 1.

Mr. KIRWAN. What will the four reservoirs cost in total?

Colonel STARBIRD. Something under $9 million.

NOTE.—It was subsequently determined that the estimate is approximately $18 million.

FLOOD DAMAGE IN AREA

Mr. KIRWAN. What has the damage been from floods that you have had?

Colonel STARBIRD. I have it for a particular location, sir. To give you an idea of it, in the 4 cities of Webster, Putnam, Jewett City, and Norwich the damage has amounted to about $3.8 million in the flood of 1938 in September; in that of July of 1938 about $1.9 million; and in that of 1936 approximately $5.3 million. Those are based upon prices then, not now.

Mr. KIRWAN. In other words, the building of the four reservoirs now would not cost as much money as the damage which has already occurred from the floods; is that correct?

Colonel STARBIRD. That is correct, sir, but it would be necessary to say, to be truthful, that all of that damage would not have been remedied. I could give you the corresponding figures on the damage remedied. It is sizable, though, and a substantial portion of the overall cost of the reservoirs.

For instance, a half million dollars would have been remedied in the September 1938 flood, about $880,000 in the July 1938 flood, and about $2.5 million in the large 1936 flood.

Mr. KIRWAN. Do you hold any of the water in reserve for release in the summertime?

Colonel STARBIRD. There is a slight seasonal pool. I say it is slight. In this particular reservoir for which we have done a substantial measure of planning, we plan on a seasonal conservation pool of approximately 4,200 acres. That is out of a total pool of 12,700 acres, or roughly one-third.

TOTAL EXPENDITURES IN NEW ENGLAND AREA

Mr. KIRWAN. I will ask you another question. Can you furnish for the record what money the Army engineers have spent in the New England area?

Colonel STARBIRD. I would have to prepare that.

Mr. KIRWAN. Yes; you will have to go back many years to get that.

Colonel STARBIRD. Yes, sir.

(The information is as follows:)

Approximately $137 million has been expended to date in the construction and planning of authorized civil works projects in the New England area.

Mr. KIRWAN. That is all, Mr. Chairman.

OTTER BROOK DAM

Mr. MARSHALL. The planning report on Otter Brook Dam states that a final determination has not been made of the size and type of its principal features. Is this still true?

Colonel STARBIRD. That is generally true, sir. However, you will note that to date we have appropriated only $100,000, and that appropriation was added by the Congress for the initiation of this planning last year.

During the time we conduct our detailed planning on reservoirs, we must investigate the foundations and investigate the project overall. It is not unusual in the early days of planning to have to make certain minor modifications.

This does not mean there is a major change forthcoming; However, it means that we are still in the early days of finalization of design.

Mr. MARSHALL. The planning report also states that your present estimates of cost are based on land acquisition in fee.

Is not this contrary to your current land policies?

Colonel STARBIRD. Yes, sir; but here, again, we are in the early days of preparation of the designs, and we will give consideration to modification of the actual estimate during the finalization of design.

Mr. MARSHALL. How much in the current estimate for this project is for features to provide recreational facilities?

Colonel STARBIRD. It is not possible to tell yet, sir; they are minor, if any. In other words, the details of the design have not been crystallized.

Mr. MARSHALL. When you say "minor," about what percentage would you consider as minor?

Colonel STARBIRD. I do not know whether I can give it percentage-wise, sir. Our policy is to provide a reasonable access to the public for the dam site, and to recreational areas. Also, to provide the necessary sanitary facilities, there, and, quite often, to provide such things as picnic facilities.

I believe that General Itschner can confirm that there is nothing elaborate in any of the plans that we make on this at the present time.

Mr. MARSHALL. What is the latest estimate of the benefit-to-cost ratio for this project?

Colonel STARBIRD. The latest estimated benefit-to-cost ratio is 1.2 to 1, sir.

WOONSOCKET

Mr. MARSHALL. The planning report for the Woonsocket project states that the benefit-to-cost ratio is 1.2 to 1, based on the operation of the project is conjunction with the West Hill Reservoir.

What is the status of the West Hill Reservoir?

Colonel STARBIRD. The West Hill Reservoir has not as yet been completed, sir. It is upstream of Woonsocket, approximately 10 to 15 miles. It is an authorized reservoir, but has not yet been completed.

Mr. MARSHALL. What would the benefit-to-cost ratio of the Woonsocket project be by itself?

Colonel STARBIRD. I do not have it, sir; but I believe I can get it computed to add to the record.

Mr. MARSHALL. Very well.

Colonel STARBIRD. It undoubtedly would be higher than the benefit-to-cost ratio given you here.

(The information requested follows:)

The benefit-to-cost ratio for the Woonsocket project alone is 1.7 to 1.

Mr. MARSHALL. Are there any further questions at this point? If not, we shall proceed to the next item.

CONSTRUCTION

HOUSATONIC RIVER

The next item which we have is "Construction," and the first construction project is the Housatonic River.

We will insert pages 8 and 9 of the justifications in the record at this point.

(The pages referred to follow:)

HOUSATONIC RIVER, CONN. (18-FOOT PROJECT) (CONTINUING)

Location.—The Housatonic River enters Long Island Sound 5 miles east of Bridgeport, 15 miles west of New Haven, about 50 miles east of New York.

Authorization.—1930 River and Harbor Act.

Benefit-cost ratio.—4.2 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$1,150,000	
Estimated local cash contributions	200,000	
Estimated project cost	1,350,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	400,000	
Appropriations to date	400,000	35
Appropriations requested for fiscal year 1956	750,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Channels: Mouth of river to Culvers Bar 18 feet deep, 20 feet wide, 5 miles long.

STATUS JANUARY 1, 1955

Eighteen-foot channel to Culvers Bar: Not started.

COMPLETION SCHEDULE

November 1955.

JUSTIFICATION

There is located on the lower 5 miles of the Housatonic River a large coal terminal, a petroleum terminal, and an important electric power steam plant of the Connecticut Light & Power Co. The capacity of the powerplant has recently been enlarged from 165,000 to 275,000 kilowatts, and it is planned to double this capacity within the next 10 years. This company serves 108 towns, constituting two-thirds of the area of the State. The electric power sold is for domestic, municipal, and industrial use. A recent survey determined that 53 percent of the output of the industrial plants served was devoted to defense activities.

The completion of the 18-foot channel will permit use of 3,000-ton coal barges rather than 1,000-ton barges now used on the 7-foot channel. The saving due to use of the larger barges is estimated at $0.50 per ton. The powerplant on the river used 580,000 tons of coal in 1952, and it is estimated that within 10 years it will use 1 million tons annually. The public utility laws of the State require that power rates be adjusted to the costs of fuel used, and therefore all savings in fuel costs will by law be passed on directly to the ultimate power consumer.

Fiscal year 1956: An appropriation of $750,000 is required in fiscal year 1956 to complete dredging of 18-foot channel from the mouth of the river to Culvers Bar under a continuing contract.

COMPLETED MODIFICATIONS—HOUSATONIC RIVER, CONN.

Work completed consists of a 7-foot channel 13 miles long and 100-feet wide to Shelton and Derby, a breakwater 5,800 feet long at the mouth of the river and

a riprap dike 1,225 feet long in the river below Stratford. The cost of this completed work is $234,000.

REMAINING MODIFICATIONS

None.

Mr. MARSHALL. Will you give the committee a brief statement on this project?

Colonel ALLEN. The Housatonic River, Mr. Chairman, is on the southern border of Connecticut, and it enters Long Island Sound between Bridgeport and New Haven. The Housatonic River is now served by a 7-foot project. Funds in the amount of $400,000 were appropriated in the 1955 fiscal year to initiate construction of this project to a depth of 18 feet, and a width of 200 feet, for a distance of 5 miles from Long Island Sound up to a location known as Culvers Bar.

The amount requested in 1956 of $750,000 will complete this project. It is proposed to do the entire project, provided appropriations are made in 1956, in this working season.

OBLIGATIONS

Mr. MARSHALL. Why has so little of the funds for this project been obligated up to March 31?

Colonel ALLEN. It is planned to let one contract this spring, and carry this into 2 fiscal years, the balance of this fiscal year, and to complete the program in the rest of the summer, so that we can get another working season, and have one contractor mobilized and demobilized.

Mr. MARSHALL. How firm is your estimate that the unobligated balance of $393,000 will be obligated by June 30?

Colonel ALLEN. It is quite firm. I believe the bids are to be opened next Wednesday, sir.

Mr. TABER. I wondered about that, Mr. Chairman, if you will permit an interruption.

You state on the left-hand side of page 8 that the estimated project cost is $1,350,000, and then you add up the appropriation, and you get $1,150,000; do you not?

LOCAL CONTRIBUTION

Colonel ALLEN. There is a $200,000 local contribution, sir, in addition to the Federal funds.

Mr. MARSHALL. What is the local cooperation required on this project, and what is the status of it?

Colonel ALLEN. The project document required that local interests contribute in cash $150,000, and suitable disposal areas. If the suitable disposal areas could not be obtained by local interests, they would contribute an additional $50,000.

The Connecticut Light & Power Co., who is one of the prime beneficaries of this project, has stated in formal communications that they are ready, willing, and able to provide the necessary cash contribution.

PORTLAND HARBOR, MAINE

Mr. MARSHALL. The next project is the Portland Harbor, Maine, and at this point in the record we shall insert pages 14 and 15 of the justifications.

(The pages referred to follow:)

PORTLAND HARBOR, MAINE (HOUSE ISLAND ANCHORAGE) (CONTINUING)

Location.—Harbor at Portland, Maine, at the southwest end of Casco Bay, about 100 miles northeast of Boston, Mass.

Authorization.—1945 River and Harbor Act.

Benefit-cost ratio.—Authorization based on elimination of navigation hazards not susceptible of monetary evaluation.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$1,495,000	
Estimated local cash contribution	0	
Estimated project cost	1,495,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1956	675,000	
Appropriations to date	675,000	45
Appropriations requested for fiscal year 1956	820,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Anchorage: Area, 170 acres; depth, 35 feet.

STATUS (JANUARY 1, 1955)

House Island Anchorage: Not started.

COMPLETION SCHEDULE

House Island Anchorage: November 1955.

JUSTIFICATION

Completion of the anchorage will permit full utilization and realization of benefits to be afforded by the 35-foot channel. Portland Harbor is the terminus of the Montreal oil pipeline, and 85 percent of the commerce passing through Portland Harbor each year is in petroleum products. In calendar year 1953 the total commerce amounted to approximately 11,720,000 tons. Sixty-five percent of the petroleum commerce are imports, carried by the deepest draft tankers, including super-tankers. Portland is at the northern extremity of the area of heaviest demand for petroleum in the country, and is farthest distant from the source of supply. The demand fluctuates widely with the season, and during the severe winter months requires elimination of all delays. Adequate harbor facilities are necessary to handle peak vessel traffic and to insure continuous 24-hour movement of oil, thus preventing shortages such as those experienced in recent winters. In 1953, 500 trips of vessels of greater than 30-foot draft and an additional 113 trips of vessels of greater than 25-foot draft were made. On occasion, six or more tankers are in the harbor simultaneously, often necessitating lying-to at the harbor mouth waiting a berth. The existing anchorage is only 30 feet deep and is inadequate for the deeper draft ships. As a result, vessels anchor in such a position as to obstruct the fairway, creating hazardous navigation conditions with acute probability of collisions.

The commerce and vessel traffic has more than doubled since the project authorization study, and the ships now using the harbor are of deeper draft and have increased from 50 to 100 feet in length. From the above, it is apparent that the present need is far more urgent than had been anticipated when the anchorage was authorized, and the benefits to be realized are far greater.

Fiscal year 1956.—The amount of $820,000 will be required in fiscal year 1956 to complete dredging of the 35-foot anchorage in the vicinity of House Island under a continuing contract.

COMPETED MODIFICATIONS—PORTLAND HARBOR, MAINE

Work completed consists of a 30-foot anchorage; a 30-foot approach channel to Back Cove; a 14-foot channel between Grand Trunk Railroad Bridge and Turkey Bridge; a 12-foot channel in Back Cove; inner harbor breakwater and removal of ledge areas in the main ship channel. The cost of this completed work is $1,830,000.

The 1945 River and Harbor Act authorized deepening of the 30-foot inner harbor channel to 35 feet, a 35-foot turning basin easterly of Vaughan Bridge and a breakwater at Spring Point. All this work with the exception of removal of hard material at two locations has been completed. Removal of this material, using funds previously made available for that work, will be accomplished in fiscal year 1955 in conjunction with dredging of House Island Anchorage. The estimated cost of this modification is $1,540,000, of which $1,433,000 is the cost of work completed to date.

REMANING MODIFICATIONS

None.

Mr. MARSHALL. Will you tell us briefly about this project?

Colonel ALLEN. Portland, Maine, Harbor, was another project which was started with funds in the 1955 appropriations. It, like Housatonic River, is a project which will be done in one working season, with the work beginning this spring, and carrying through the summer, and termination in the fall.

The improvement to be provided at Portland, Maine, is a 35-foot anchorage. Portland, Maine, itself, is served by a 35-foot project to its harbor and terminal facilities, but at the present time has no suitable anchorage where the vessels may lay to await their turn at a terminal.

Portland Harbor has a good tonnage of 11,720,000 tons and last year had 500 vessel trips drawing in excess of 30 feet.

So, the need for a 35-foot anchorage area is obvious, and a place where the ships can anchor and wait for their turn and take their turn at the terminal facilities.

BENEFIT-TO-COST RATIO

Mr. MARSHALL. I notice that there is no estimate of a benefit-to-cost ratio in this project.

Why is not it possible to establish a ratio?

Colonel ALLEN. It would be possible, but the authorization in 1945 was based on the elimination of navigation hazards which are not susceptible of accurate monetary determination.

It is an improvement which, while not expected to result in savings in transportation costs, would eliminate a serious hazard which now exists when loaded tankers are forced to anchor in the fairway awaiting berthing space. A single collision with a loaded tanker laden with gasoline would more than offset the annual charges of this project, which are $68,000.

UNOBLIGATED BALANCE

Mr. MARSHALL. Would you explain the large unobligated balance of $760,280 which you had on March 31?

Colonel ALLEN. Yes, sir.

This project will be done in one working season. The funds for this project in 1955 would be combined with those appropriated in 1956, and a contract let, and during this spring and summer and fall utilized for accomplishment of the work.

Doing it that way, we avoid contractor mobilization and demobilization.

Mr. KIRWAN. You say you will finish it up this year?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. You will complete the project this year?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. It looks like a well-worthwhile project. It involves 170 acres; does it not?

Colonel ALLEN. It is of about 170 acres, and has close to 12 million tons annually.

Mr. KIRWAN. How many ships do you think have had to wait because they could not get into the harbor?

Colonel ALLEN. They estimate that every vessel which goes in there loses several hours in waiting for proper space.

Mr. KIRWAN. How many vessels would you say have entered there?

Colonel ALLEN. We had 500 vessels last year which drew in excess of 30 feet.

Mr. KIRWAN. If you had that many vessels, and you say they lay out there for so many hours, it will surely be a well worth while project, considering the amount of money which is wasted as a result of the crews not getting their cargoes onto the piers where business people want it?

Colonel ALLEN. That is correct, sir. Petroleum products represent a large item of this commerce, and the time when the petroleum is needed up here in this country is in the winter time when the storms on the North Atlantic are at their worst.

So, the time that the project is needed is the time of the greatest need for the principal commodity.

Mr. KIRWAN. That is all, Mr. Chairman.

MYSTIC RIVER, MASS.

Mr. MARSHALL. The next project is the Mystic River, Mass. We shall insert pages 19 and 20 of the justifications into the record.

(The pages referred to follow:)

MYSTIC RIVER, MASS. (35-FOOT PROJECT (NEW))

Location.—Channel in Mystic River, Mass., extending 1.3 miles from Boston Harbor, in northwesterly direction.

Authorization.—1950 River and Harbor Act.

Benefit-cost ratio.—4.0 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated federal cost	$4,500,000	
Estimated local cash contributions	0	
Estimated project cost	4,500,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	500,000	11
Balance to complete after fiscal year 1956	4,000,000	

PHYSICAL DATA

Channels: Boston Harbor to Malden Bridge, 35 feet deep, 940 to 1,060 feet wide for about 1 mile, then reducing in width to 150 feet at Malden Bridge. Total length 1.3 miles.

STATUS (JANUARY 1, 1955)

Not started.

COMPLETION SCHEDULE

JUSTIFICATION

February 1959.

The Mystic River serves a heavy industrial area of the port of Boston. The entrance channel and main harbor channel of Boston Harbor have been dredged to a depth of 40 feet. However, the full benefit of the deep-water port is not received as long as shipping is limited by inadequate depths in the channels serving the waterfront terminals. Since 1945 Mystic River has handled an annual commerce ranging from 4 million to 5 million tons, including more than 40 percent of the imports and about 25 percent of the total commerce of the port of Boston.

There are located on the Mystic River a major oil refinery, the only one of significant size in New England; a large electric power generating station; fuel distributors; a lumber terminal; a sugar refinery; and an important iron works, with the only blast furnace in New England. Since the principal commodities handled are petroleum products and coal, which are vital commodities in an industrial area contributing heavily to the defense effort, it is considered that a 35-foot channel is essential to the safe and unimpeded movement of vessels carrying these commodities. The Commonwealth of Massachusetts in 1951 completed the removal of the former drawbridge and the construction of a high-level bridge over the channel at a cost of $27 million which has resulted in more favorable entrance conditions for vessels unloading cargoes on the Mystic River.

The transition to larger ships, such as the supertankers, increases the need for the channel deepening. Seventy-five percent of the Mystic River commerce is petroleum products. Oil tankers presently suffer a cumulative total annual delay of over 2,000 hours. In addition, 30 supertankers a year enter Mystic River partly loaded to prevent groundings due to limitations of channel depth. Elimination of these navigation delays and loading limitations would result from provision of this channel.

Fiscal year 1956.—Initiate dredging of 35-foot channel from Boston Harbor to Malden Bridge under continuing contract. To provide for an orderly and economical rate of construction with completion in fiscal year 1959, as scheduled, $500,000 will be required in fiscal year 1956 for application to this work.

Completed modifications, Mystic River, Mass.—Work completed consists of a 30-foot channel from Boston Harbor to Malden Bridge; a 20-foot channel between the Malden Bridge and the Boston & Maine Railroad bridge; a 6-foot channel for a distance of about 1.3 miles above the railroad bridge; and a 4-foot channel for the remaining distance of 1.8 miles to Craddock Bridge, the upstream limit of the project. The cost of this completed work is $770,000.

Remaining authorized modifications.—None.

Mr. MARSHALL. Would you give us a brief statement on this project?

Colonel ALLEN. The Mystic River, Mr. Chairman, is an offshoot from the Boston Harbor Channel. The Boston Harbor Channel is served by a 35-foot project.

The Mystic River at the present time has a project depth of 30 feet, which means that the vessels which terminate their voyage at the Mystic River, and discharge their commodities, have a lost time waiting for the proper tides in order to get in and utilize the terminals in the Mystic River.

The program here is one of a new start. We have spent no money on this in previous years for this modification, and this $500,000 which is requested for 1956 would permit the initiation of this work, and carry it on to completion in 1959, with subsequent appropriations.

The Mystic River averages something less than 5 million tons of commerce annually.

Mr. KIRWAN. This is one of the larger projects; is it not, in New England?

Colonel ALLEN. Yes, sir; it is one of the major remaining authorized modifications yet to be done to increase the New England port facilities.

Mr. KIRWAN. That is all, Mr. Chairman.

Mr. TABER. This project will cost more than Portland; will it not?

Colonel ALLEN. Yes, sir; it is $4.5 million. There is more rock and the work in the Mystic River is more extensive there than at Portland.

Mr. MARSHALL. Has there been any movement of industry out of this immediate area since the war?

Colonel ALLEN. Not to my knowledge of the type that is served by commodities entering Mystic River.

PORTSMOUTH HARBOR AND PISCATAQUA RIVER

Mr. MARSHALL. The next project is "Portsmouth Harbor and Piscataqua River." We will put pages 24 and 25 of the justifications in the record.

(The pages referred to follow:)

PORTSMOUTH HARBOR AND PISCATAQUA RIVER, MAINE AND NEW HAMPSHIRE (35-FOOT PROJECT—NEW)

Location.—About 45 miles northeast of Boston Harbor, Mass., and about 37 miles southwest of Portland Harbor, Maine. The lower river extends from the Atlantic Ocean to a point about 2 miles upstream of the interstate high-railroad bridge connecting Portsmouth, New Hampshire and Kittery, Maine.

Authorization.—1954 River and Harbor Act.

Benefit cost ratio.—1.5 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$952,000	
Estimated local cash contributions	0	
Estimated project cost	952,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	400,000	42
Balance to complete after fiscal year 1956	552,000	

PHYSICAL DATA

Channels: Ledge removal to 35 feet in the vicinity of Gangway Rock, Badgers Island, and Boiling Rock.

STATUS (JANUARY 1, 1955)

Not started.

COMPLETION SCHEDULE

December 1956.

JUSTIFICATION

The project for Portsmouth Harbor and Piscataqua River, New Hampshire and Maine, provides for removal of 3 ledge-rock shoals to a depth of 35 feet. Removal of these submerged ledges will afford an unobstructed channel 35 feet

deep, 400 feet wide, through Portsmouth Harbor and the lower Piscataqua River, to a point about 2 miles upstream of the 2-level interstate highway-railroad bridge connecting Portsmouth, New Hampshire and Kittery, Maine. These rock shoals project 15 feet above the desired channel depth of 35 feet, and are located at sharp bends in the channel. The combination of these ledges and the swift 4-knot harbor currents make this one of the most hazardous harbors on the east coast.

The area immediately tributary to Portsmouth Harbor and the Piscataqua River comprises the city of Portsmouth and the town of Newington, both in New Hampshire, and the town of Kittery, Maine. The principal industries of the area are the manufacture of shoes and gypsum products, the generation of electric power, and the operation of bulk coal yards and petroleum terminals. Portsmouth is also the location of a large United States naval shipyard, and the Portsmouth Airbase which is under construction by the United States Air Force at Newington.

The commerce of Portsmouth Harbor has quadrupled in the past 20 years, reaching 956,860 tons in 1953. More than 75 percent of the commerce is in petroleum, carried in large tankers particularly vulnerable to the hazards of navigation. In 1946 there were no vessel trips of greater than 28-foot draft in Portsmouth Harbor, whereas in 1953 there were 40, of which 28 were 30 feet or greater.

Fiscal year 1956.—Initiate removal of the three-ledge areas to a depth of 35 feet under a continuing contract. To provide for an orderly and economical rate of construction with completion in fiscal year 1957, as scheduled, $400,000 will be required in fiscal year 1956 for application to this work.

Mr. MARSHALL. Would you give us a brief statement on this project?

Colonel ALLEN. This project, as the Mystic River project, comes under the category of a new start.

The project was authorized in the 1954 River and Harbor Act, and provides for the removal from the Piscataqua River of three dangerous rock areas.

The Piscataqua River has naturally deep water, except for these rock ledges which make navigation hazardous.

These rock ledges which occur in the bends of the channel and in the approaches to previous projects into the channel, and in one instance a depth of 20 feet at mean low water, is available over the rocks. That is inadequate depth, combined with the positioning of the ledges with respect to the alinement of the channel to permit navigation of deep draft ships, only at high water periods, or for approximately an average of 3 hours per day.

LOCAL COOPERATION

Mr. MARSHALL. I notice in the planning report the statement that assurances of local cooperation are to be requested when construction funds are made available, and I assume this refers to formal assurances, but I do not find anything to indicate that you have even informal assurances.

Colonel ALLEN. The informal assurances, Mr. Chairman, are received at the time the project is sent to the agencies prior to authorization. It is not our practice to go to local interests for formal assurances until there is an assurance of funds. Otherwise, there would be considerable local interest which may result in no project, if funds are not made available.

The informal assurances, to the extent that they are required by the project document, were obtained when this project was authorized in 1954.

Mr. MARSHALL. However, you will get those assurances before the construction is started?

Colonel ALLEN. Yes, sir.

ACCIDENTS AT PROJECT SITE

Mr. MARSHALL. Have there been any accidents in this channel as a result of the hazards described in the justifications?

Colonel ALLEN. The project document contains a tabulation and listing of the damages and accidents which have occurred at Gangway Rock, and at the ledge at the southwest end of Badgers Island. There have not been any accidents recently at Boiling Rock, but there is a history of accidents at that location as stated in the project document.

Mr. MARSHALL. How long will it take to make the detailed survey and prepare plans and specifications? How long after that will it be before actual work will begin?

Colonel ALLEN. It is expected that actual work will begin 1 year from this spring, and it will carry us into fiscal 1957, and again, the work will be done in 1 working season, that of calendar year 1956.

The plans and specifications can be completed between the time funds are made available and the time when the work would be initiated next spring.

TONNAGE CARRIED BY CHANNEL

Mr. MARSHALL. Do you have figures showing the tonnage that has been carried by this channel for each year from 1945 to 1954?

Colonel ALLEN. I do not have them with me for 1945 to 1954.

Mr. MARSHALL. Would you insert such information into the record at this point?

Colonel ALLEN. Yes, sir.

(The information requested follows:)

The tonnages for Portsmouth Harbor, N. H., for the period 1944–53, the latest available, are as follows:

	Tons		*Tons*
1944	231, 301	1949	505, 480
1945	231, 346	1950	779, 238
1946	282, 484	1951	863, 335
1947	398, 841	1952	919, 214
1948	540, 852	1953	956, 860

Mr. TABER. Is this a job that can be done by channeling your traffic to one side, or the other, of those rocks?

Colonel ALLEN. No, sir; it is not. If you will look at the two red areas in the lower center of the page, the ships have to now maneuver to the north of the first red dot, and then make a hard left at that point and come down around to the south of the other one. The depths between Pierces Island and Gangway Rock are not sufficient so that the channel could be relocated. Every effort has been made in designing this channel to minimize the amount of rock which will have to be removed in order to provide the proper width.

Mr. TABER. Do you not have to get around it now in order to get by?

Colonel ALLEN. They navigate now, sir, only on high tide, and deep draft ships must lay outside and wait for that tide.

Mr. TABER. You said there was only a depth of 16 feet of water on top of the rock?

Colonel ALLEN. I believe it is 20 feet, sir.

Mr. TABER. You do not have a 15-foot tide there?

Colonel ALLEN. We have tidal range there of about 9 feet, and there is some width available on either side. That 20-foot depth that I mentioned is not controlling for the entire width of the channel. It occurs within the channel dimensions, but that is not the depth clear across the channel.

Mr. TABER. It sounds like a lot of cost for the volume of traffic there.

HAMMONASSET BEACH

Mr. MARSHALL. The next project is Hammonasset Beach. We shall insert pages 29 and 30 of the justifications into the record.

(The pages referred to follow:)

HAMMONASSET BEACH, MADISON, CONN. (NEW)

Location.—Hammonasset Beach extends along the shore of Long Island a distance of about 2 miles, in the town of Madison, about 25 miles east of New Haven, Conn.

Authorization.—1954 River and Harbor Act.

Benefit-cost ratio.—6.9 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$167,000	
Estimated local cost	334,000	
Estimated project costs	501,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	167,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Beach replenishment: Widen beach 50 to 100 feet, 2 miles long by direct placement of sand.

Training walls: At Toms Creek, 320 and 400 feet long.

Groin: At Hammonasset Point, 800 feet long.

STATUS (JANUARY 1, 1955)

Construction of the project was initiated by the State of Connecticut in 1954.

COMPLETION SCHEDULE

Beach replenishment, training walls, and groin construction being undertaken by State of Connecticut anticipated to be completed in latter part of fiscal year 1955.

JUSTIFICATION

Hammonasset State Beach, located in Madison, is approximately the central point of the Connecticut shore of Long Island Sound. The beach is about 2 miles long, and is the principal beach in the State. The beach averages 50 feet wide, but is subject to erosion, and is in places less than 25 feet wide. Hammonsset Beach, and the Connecticut shores in general, are intensively used for bathing, because of the warm sheltered waters of Long Island Sound, and the proximity to New York and the great population centers of the East. Hammonasset State Beach has an annual attendance of over 1 million. This attendance, increasing generally since 1930 in proportion to the rate of population increase, has sharply risen by 25 percent in the past 2 years.

Long Island Sound and the shore areas and harbors bordering it are among the most important resources of the State. In 1953, the Connecticut Legislature,

recognizing the importance of the beaches to the State economy, appropriated $500,000 for improvement of the State beaches at Hammonasset and Sherwood Island in accordance with the recommendations of the beach erosion control study undertaken in cooperation with the Corps of Engineers. Construction of the project, underway by the State of Connecticut, is scheduled for completion in the latter part of fiscal year 1955. The requested appropriation for fiscal year 1956 is to reimburse the State for the Federal share, or one-third of the cost of construction. The project will provide more beach area, and will protect the existing economy of the area.

Fiscal year 1956.—Construction of the shore protection project for Hammonasset Beach is to be undertaken by the State of Connecticut and is anticipated to be completed by fiscal year 1956. The requested appropriation of $167,000 is the estimated Federal share of the total project cost.

Mr. MARSHALL. We will appreciate it if you will give us a brief statement regarding this project, and discuss the assurances that you have of the requirements of local cooperation being fulfilled.

Colonel ALLEN. Since this committee will hear all of the beach erosion projects, if it meets your pleasure, I would like to give a little background as to how these projects are developed, as opposed to the general type of navigation project.

Beach erosion projects are developed somewhat differently than the navigation projects, in that the local interests apply through the local district engineer for a coperative study to be entered into between the local interests, which may be a county, State, or city, and the Federal Government. They agree on an estimate for the cost of this cooperative study. The funds are made available by the local interests, and matched in a regular appropriation bill with funds from the Federal Government. These funds are used to prepare a beach erosion control report which is submitted to the Beach Erosion Board, to the Chief of Engineers, and finally to the Congress for authorization.

Beach erosion projects, unlike navigation and flood-control projects, are for the most part actually constructed by the local interests. The law permits the Chief of Engineers to do the construction if requested by local interests, but that has been the exception rather than the rule.

The funds requested in this year's appropriation bill are those which will bring the Federal Government up to date with local interests who have already expended their funds on these projects in the bill and in some cases, completed the project, or will have expended funds by the end of fiscal year 1956.

In the case of Hammonasset Beach, this project was authorized in the 1954 River and Harbor Act, as a result of a cooperative study by the State of Connecticut and the United States.

It is one of the principal benches of Connecticut.

As a protective measure, seawalls and bulkheads have been constructed by local interests. That work is effective, but the erosion still continues, which was the reason for initiating the cooperative study.

The project provides for the placement of beach replenishment, training walls, and a groin.

The State of Connecticut has submitted plans and specifications to the district engineer, who has submitted them to the Chief of Engineers, and the work is to be done by local interests in accordance with their plans and specifications which have been approved.

It is expected that the State will complete the work by 1955, and the $167,000 will be combined with those of local interests in the amount of $334,000, and will provide a completed project.

WINTHROP BEACH, MASS.

Mr. MARSHALL. The next project is Winthrop Beach. We will insert pages 34 and 35 of the justifications into the record at this point.

(The pages referred to follow:)

WINTHROP BEACH, WINTHROP, MASS. (NEW)

Location.—Winthrop Beach, along the shore of the Atlantic Ocean, in the town of Winthrop in metropolitan Boston, is 3 miles north of the entrance to Boston Harbor.

Authorization.—1950 River and Harbor Act.

Benefit-cost ratio.—1.7 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$340,000	
Estimated local cost	680,000	
Estimated project cost	1,020,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	210,000	62
Balance to complete after fiscal year 1956	130,000	

PHYSICAL DATA

Seawalls: Raise existing seawall 2 to 3 feet between Pearl Avenue and Wave Way, and extend seawall from Wave Way to Trident Avenue, a distance of 400 feet. Raise existing seawall 2 to 3 feet between Beacon and Irwin Streets.

Jetties: Construct 8 groins, aggregate length, 2,300 feet.

Beach replenishment: Sand fill between groins.

STATUS (JANUARY 1, 1955)

Seawalls: Raise seawall between Pearl Avenue and Wave Way: Completed.
Extend seawall 400 feet, between Wave Way and Trident Avenue: Completed.
Raise seawall between Beacon and Irwin Streets: Not started.

Jetties: Construct 8 groins, 3 completed.

Beach replenishment (currently scheduled): Completed.

COMPLETION SCHEDULE

Seawalls: Raise seawall between Beacon and Irwin Streets, fiscal year 1956.

Jetties: Construction of five groins and related sand fill, deferred indefinitely.

All construction undertaken or to be undertaken by Commonwealth of Massachusetts.

JUSTIFICATION

Winthrop Beach is located about 4 miles north of Boston. It is about 2 miles long, and is a reservation of the Metropolitan District Commission, comprising Winthrop Shore Drive, a protective seawall, and a narrow protective beach. The southerly part of the area is also largely protected by offshore breakwaters, and shoals formed by natural deposition behind the breakwaters.

The area is publicly owned and publicly used for bathing by local and Boston residents from within reasonable distances. Primarily, however, the beach area serves as protection for the highway, and for the residential development behind it. The configuration of the shore in this area is such that it is subject to much more severe wave attack than most of the coast, storms having a spectacular effect in the area. Waves hitting the seawall throw solid water and spray 50 feet or more in the air, and the accompanying winds blow water, sand, and stones across the highway and damage houses in the area.

In view of the urgency of the problem the Commonwealth of Massachusetts has proceeded with planning and construction of the shore protection project.

The State had expended about $175,000 by the end of fiscal year 1954 in wall and groin construction, and has placed beach fill at an estimated cost of $350,000. There will remain to complete the project an item of wall construction at an estimated cost of $57,000 scheduled for 1955, and further groin construction together with related sand fill scheduled in the future, if required, at an estimated cost of $150,000. This groin construction will not be undertaken at this time, and its construction in the future will depend on experience with the project.

Fical year 1956.—Construction of shore protection project undertaken by Commonwealth of Massachusetts is anticipated to be about 60 percent complete by fiscal year 1956. This requested appropriation of $210,000 is the Federal share of project cost to be repaid to the Commonwealth of Massachusetts.

Mr. MARSHALL. Will you give us a statement on this project?

Colonel ALLEN. Winthrop Beach was authorized in the 1950 River and Harbor Act.

It provides for Federal participation to the extent of $340,000 to provide improvements to the existing seawall, and the construction of 8 groins and beach fill.

This work has been initiated by the Commonwealth of Massachusetts. Three of the eight groins have been constructed, and certain of the seawall improvements have been made. A portion of the beach fill has been placed, and by the end of fiscal year 1956, the project will be about 60 percent complete.

The Federal share of this portion of the project to be completed through fiscal year 1956 is $210,000. As in the case of the prior project, plans and specifications have been approved, and the work done by the State has been submitted to the Chief of Engineers for his approval.

BEACH EROSION WORK ACCOMPLISHED AND PLANNED

Mr. MARSHALL. Has the local cooperation been assured in all budgeted beach-erosion projects?

Colonel ALLEN. Yes, sir; it has.

NOTE.—The committee was subsequently advised that the above answer should have been "It has, or it will be prior to expenditure of Federal funds." The following material was submitted at the committee's request, to clarify the status of work accomplished and plans for future work as related to the authorized plan for each beach erosion project.

ATLANTIC CITY, N. J.

The authorized plan of improvement at Atlantic City provides for the replacement of a damaged concrete seawall by a steel sheet pile wall; a stone jetty about 4,800 feet long, extending from Brigatine Island parallel to and about 2,300 feet from the Maine Avenue bulkhead; revetment of the bulkhead along Maine Avenue; 2 new groins and extension of existing groins along Maine Avenue; artificial placement of sand fill to widen the ocean and inlet beaches; extension of the Oriental Avenue jetty; 5 new timber groins on the ocean frontage and extension of the stone groin at Vermont Avenue.

To date the bulkhead at entrance to Clam Creek, groin extensions at Madison and Grammercy Avenues, five timber groins along the ocean front, and the beach fill have been completed. In addition, a 1,560-foot section of the stone jetty northeast of the inlet channel has been constructed, and 1,250 feet of revetment placed along Maine Avenue. The cost to local interests of this work is estimated to be $2,235,000, the Federal share of which is $745,000.

Work anticipated to be completed by the end of fiscal year 1956 includes extension of the stone jetty northeast of the channel, and the extensions of the existing Oriental Avenue jetty and Vermont Avenue groin. The total cost of this work is estimated at $483,000, of which the Federal share is $161,000.

Plans and specifications have been approved by the Chief of Engineers for the bulkhead at the entrance to Clam Creek and for the first section of the stone jetty northeast of the inlet channel. Plans and specifications have been submitted for approval for the second section of the jetty northeast of the inlet channel, stone groin extensions at Madison Avenue and Grammercy Avenue and for the construction of five timber groins along the ocean front. The Board of Commissioners of Atlantic City have adopted resolutions providing satisfactory assurances of compliance with all requirements of local cooperation.

The budget request for fiscal year 1956 is for $906,000 which includes $745,000 for the estimated Federal share of work completed to date and $161,000 for the estimated Federal share of additional work scheduled for completion by the end of fiscal year 1956.

Cold Spring Inlet (Cape May), N. J.

The authorized plan for restoration and protection of the shore of Cape May includes the placing of about 1,132,000 cubic yards of material to restore the beach, construction of 5 new timber groins, and extension of 5 existing groins. Local interests have constructed 2 stone groins, 1 at Third Avenue and 1 at Patterson Avenue, and extended 3 stone groins at a total cost of $402,500. In addition, local interests have expended $173,500 for protective works not embraced in the authorized plan. Inasmuch as the approved plan provides for timber groins at Third and Patterson Avenues, the estimated cost of timber groins was used for the purpose of determining the amount of Federal participation in the work completed to date. The Federal share of the completed work as determined on this basis is $40,000.

Plans and specifications have been received for work completed by local interests. The order of construction in the approved plan was for placement of the beach fill prior to the groin construction. Local interests adopted the reverse order of construction and since they are required to bear about 80 percent of the initial cost of the improvement, it appears unreasonable to impose a change in their plan of construction at this time. In letter dated January 12, 1955, the attorney for the city of Cape May indicated that local assurances would not be forthcoming in the near future.

The budget request for fiscal year 1956 is for $60,000, which includes $40,000 for the Federal share of work completed to date and $20,000 for additional groin construction that was anticipated to be completed by the end of fiscal year 1956 but which is not presently scheduled for fiscal year 1956.

Hammonasset Beach, Conn.

The plan of protection authorized for Hammonasset Beach provides for (1) widening of 10,000 feet of beach by placement of 460,000 cubic yards of sandfill so as to increase the width above high water by 100 feet at the western end, diminishing by 50 feet at the eastern end; (2) stabilization of the inlet at Toms Creek by construction of 2 steel sheet-pile training walls 320 and 400 feet long, the 320-foot-long training wall to include a 210-foot extension of the existing steel sheet-pile groin; and (3) construction of an 800-foot-long groin at the eastern end of the beach at Hammonasset Point.

No actual construction work had been accomplished through January 1, 1955, although plans and specifications had been completed by the State of Connecticut and approved by the Office, Chief of Engineers. It is anticipated that all work included in the authorized project for Hammonasset Beach will be completed in calendar year 1955. Plans and specifications were approved by the Office, Chief of Engineers, prior to advertising, and accordingly, no deviations from the approved plan are anticipated. Formal assurances of compliance with the remaining requirements of local cooperation have not been received. They will be obtained prior to the expenditure of Federal funds and no difficulty is anticipated in obtaining these assurances.

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The budget request for fiscal year 1956 is $167,000, which represents the total Federal share of the estimated cost of the authorized project.

HAMPTON BEACH, N. H.

The plan of protection authorized for Hampton Beach consists of widening the high-water width of the beach to 150 feet by direct placement of sandfill along 5,200 feet of shore extending northerly from Haverhill Street, with an added 25-foot widening along the northern 1,250 feet of the fill area. The total estimated quantity of fill required is 340,000 cubic yards.

No work had been accomplished through January 1, 1955. Plans and specifications were approved by the Office, Chief of Engineers, on March 14, 1955, and it is anticipated that the beach fill will be placed in calendar year 1955. Inasmuch as plans and specifications were approved prior to advertising, no deviations from the approved plan are anticipated. Formal assurances of compliance with the remaining requirements of local cooperation have not been received. They will be obtained prior to the expenditure of Federal funds and no difficulty is anticipated in obtaining these assurances.

The budget request for fiscal year 1956 is $140,000, which represents the total Federal share of the estimated cost of the authorized project.

OCEAN CITY, N. J.

The authorized plan of protection at Ocean City provides for the extension of 7 existing groins, 1 each at Morningside Road, 1st Street, 3d Street, 5th Street, 7th Street, 9th Street, and 11th Street, a total length of groin extension of 2,085 linear feet; and the placement of 1,900,000 cubic yards of sand to widen the existing beach an average of 300 feet over a length of about 9,050 feet between Surf Road and 12th Street. As an emergency measure to prevent serious damage to the boardwalk and other beach-front properties and further serious scour of the beach, placement of 2,500,000 cubic yards of beach fill was completed by local interests along the ocean front from 14th Street to Atlantic Boulevard in August 1952, substantially in accordance with the approved plan. Since authorization of Federal participation in this project, local interests have furnished necessary assurances of fulfilling all requirements of local cooperation. In this connection, a study is now underway by the Beach Erosion Board as to the adequacy of the material placed as sandfill.

The cost of placing the beach fill referred to above within the project area is $495,000, of which the Federal share is $52,500. It is anticipated that extensions of groins at 11th, 9th and 7th Streets, in accordance with the authorized plan of improvement will be completed by the end of fiscal year 1956. The estimated cost of these groins extensions is $137,000, of which the Federal share is estimated at $14,500. Inasmuch as plans and specifications for all work, whether completed or in prospect, must be approved by the Chief of Engineers prior to making any payment to local interests, reimbursement will be limited to that portion of the work which is acceptable as a part of the approved plan.

The budget request for fiscal year 1956 is $67,000, which represents the Federal cost of the beach replenishment accomplished in 1952 and the estimated Federal cost of groin extensions expected to be completed by the end of fiscal year 1956.

PRESQUE ISLE PENINSULA, PA.

The authorized plan of protection includes reconstruction of approximately 1,700 feet of existing stone seawall, construction of 1,120 feet of cantilever steel sheet pile bulkhead, removal of approximately 2,600 feet of existing bulkheads, construction of 9 new groins each approximately 300 feet long, extension of 1 existing groin, removal of the outer end of 1 existing groin, placement of 1,100,000 cubic yards of sand on the neck of the peninsula, placement of 400,000 cubic yards on the remainder of the perimeter to be improved and a stockpile of 1 million cubic yards at the waterworks reservation to serve as a feeder beach.

The reconstruction of the existing stone seawall and the extension of similar construction in lieu of the recommended 1,120 feet of cantilever steel sheet pile bulkhead was completed by the Commonwealth of Pennsylvania in 1952 at a cost of $772,000, of which the one-third Federal share would be $257,000. Plans and specifications for this work have not been submitted for approval by the Chief of Engineers as required by the authorizing legislation. The substitution of the stone seawall extension for the steel sheet pile bulkhead was done as an emergency measure when steel sheet piling was not readily obtainable. Review of

plans and specifications for work placed prior to authorization will be made to determine its acceptability under the authorized project.

The Commonwealth of Pennsylvania has requested that the Corps of Engineers perform the necessary planning for the remainder of the authorized improvement and has indicated that they will also request the corps to construct the project. Acceptance of $60,000 advance funds from the Commonwealth of Pennsylvania was authorized on November 1, 1954, by the Secretary of the Army to initiate the planning.

No formal assurances of compliance with the requirements of local cooperation have been received from the Commonwealth of Pennsylvania to date, but no difficulty in securing the required assurances is anticipated. At informal conferences, Commonwealth representatives were in accord with the plan recommended in the document and indicated that the required assurances would be forthcoming. The State of Pennsylvania has appropriated $2,500,000 toward the cost of the project.

With the advance of planning funds, it is estimated that all planning will be completed in fiscal year 1955. The Federal share of work estimated to be completed through fiscal year 1956, including that portion of cost of work previously completed by the Commonwealth of Pennsylvania found acceptable under the authorized plan of improvement, is $600,000, which is the amount of the budget request.

Virginia Beach, Va.

The plan of improvement for beach protection at Virginia Beach provides for direct placement of 1,412,000 cubic yards of sand to provide a flat berm, 100 feet wide and sloping to the ocean floor, for a distance of 3.3 miles along the ocean front; and the construction of timber groins, as required, up to a maximum of 21. The groins are to be 300 feet in length, perpendicular to the beach, with a distance betwen them of 600 feet. All of the placement of sand for beach replenishment has been accomplished. Construction of the groins has been deferred pending a determination of the need for them. The cost of work completed to date is $722,000, of which the Federal share is $235,000.

The Virginia Beach Erosion Commission, a State agency, and the city of Virginia Beach, acting jointly, have adopted the approved plan of restoration and protection; have submitted, prior to initiation of beach restoration work, detailed plans and specifications covering the work, and arrangements for its prosecution; have provided at their own expense all necessary lands, easements, and rights-of-way; and have submitted categorical assurances that they will comply with all other conditions of local cooperation. In this connection, it is proposed to have the Virginia Beach City Council confirm such assurances by formal resolution in order that it may be legally binding on the city.

The budget request for fiscal year 1956 is $235,000, which represents the Federal cost of beach replenishment accomplished by local interests.

Winthrop Beach, Mass.

The authorized plan of protection provides for the extension of the existing seawall from Wave Way to Trident Avenue, a distance of 400 feet; raising the existing seawall 2 to 3 feet between Pearl Avenue and Wave Way and from Beacon Street to Irwin Street; construction of 8 groins with an aggregate length of 2,300 feet; and the placement of 200,000 cubic yards of sand fill between the groins. To date the seawal extension from Wave Way to Trident Avenue has been completed, the seawall between Pearl Avenue and Wave Way has been raised, 3 groins have been constructed and practically all of the sand fill has been placed. All plans and specifications for the work that has been accomplished were submitted to the Corps of Engineers for approval and were in compliance with the authorized project plan. Formal assurances of compliance with the remaining requirements of local cooperation have not been received. They will be obtained prior to the expenditure of Federal funds and no difficulty is anticipated in obtaining these assurances.

The cost of work completed to January 1, 1955, is $571,000, of which the Federal share is $190,000. It is anticipated that raising of the seawall between Beacon Street and Irwin Street will be completed by the end of fiscal year 1956. The estimated cost of this work is $59,000, of which the Federal share is $20,000. Construction of the remaining 5 groins with an estimated total cost of $390,000 and a Federal cost of $130,000 has been deferred until found necessary.

The budget request for fiscal year 1956 is $210,000, which represents $190,000 for completed work, and $20,000 for additional work scheduled for completion before the end of fiscal year 1956.

Hampton Beach

Mr. Marshall. The next project is Hampton Beach. We will insert pages 39 and 40 of the justifications into the record at this point.

(The pages referred to follow:)

Hampton Beach, Hampton, N. H. (New)

Location.—Hampton Beach is about 40 miles north of Boston, Mass., and comprises the shore of the Atlantic Ocean between the entrance to Hampton Harbor and Great Boars Head, a distance of about 2 miles.

Authorization.—1954 River and Harbor Act.

Benefit-cost ratio.—1.7 to 1.0.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$140,000	
Estimated local cost	280,000	
Estimated project cost	420,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	140,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Beach replenishment: Widen beach 150 feet to 175 feet, for a distance of about 1 mile by direct placement of sand.

STATUS, JANUARY 1, 1955

COMPLETION SCHEDULE

Work to be undertaken by State of New Hampshire and is anticipated to be completed by fiscal year 1956.

JUSTIFICATION

Hampton Beach is on the Atlantic Ocean about 40 miles north of Boston. The beach is about 2 miles long, and of varying widths, being 60 to 85 feet wide in the 1 mile extent proposed to be improved by placement of sandfill. Hampton Beach is perhaps the most widely known shore resort area in northern New England. The population of Hampton in the summer season is 10 times the year-round population. Over 60 percent of the entire property valuation of the town of Hampton is classified as recreational. The economy of the town rests principally upon recreational use of its shore. To somewhat less degree the economy of the State of New Hampshire depends on its shore development for recreation. In recognition of this fact, and to plan a coordinated development of its coastal region, the State of New Hampshire entered into a Federal-State cooperative beach erosion study of Hampton Beach, and has secured authorization for navigation studies of its three small-boat harbors.

The cooperative beach erosion study found that erosion was occurring along Hampton Beach, and recommended adoption of a Federal project for participation in the cost of placement of sandfill on Hampton Beach. The report notes Hampton Harbor, adjacent to the beach, as the most logical source of sand for the beach fill. New Hampshire, considering this project and further development of the area as of urgent necessity, has authorized over $2 million for public works in the Hampton shore area, including construction of seawalls, improved highways, and placement of the sandfill on Hampton Beach. The State is now preparing plans and specifications in anticipation of placing the beach fill in 1955.

The benefits evaluated consist entirely of recreational benefits derived from use of the beach. The project will provide more beach area and will protect the existing economy of the area.

Fiscal year 1956.—Construction of project for Hampton Beach is to be undertaken by the State of New Hampshire and is anticipated to be completed by fiscal year 1956. The requested appropriation of $140,000 is the Federal share of the total project cost.

Mr. MARSHALL. There seems to be a discrepancy between the planning report, which has a Federal cost estimate of $140,000, and the justification book which indicates a request of $146,000.

What is the reason for this difference?

Colonel ALLEN. There is an error, sir, in the justification sheet of $6,000. The correct figure is $140,000.

Mr. MARSHALL. Are there any questions?

If not, we shall proceed to the next item.

FOLLY BROOK DIKE AND CONDUIT

Mr. MARSHALL. The next project is "Folly Brook dike and conduit." We will insert pages 44 and 45 of the justifications into the record.

(The pages referred to follow:)

FOLLY BROOK, HARTFORD, CONN. (NEW)

Location.—Hartford, Conn., is located in Hartford County on the west bank of the Connecticut River, 52 miles above the mouth.

Authorization.—1950 Flood Control Act.

Benefit-cost ratio.—5.8 to 1 (Hartford and Folly Brook).

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$303,000	
Estimated local cash contributions	189,000	
Estimated project cost	492,000	
Appropriations to June 30, 1954	[1] 15,000	
Appropriations for fiscal year 1955	25,000	
Appropriations to date	40,000	13
Appropriations requested for fiscal year 1956	263,000	100
Balance to complete after fiscal year 1956	0	

[1] Balance available from appropriations made to Hartford project as originally authorized.

PHYSICAL DATA

Earth dike: 700 feet.
Conduit: 1,900 feet.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Levees: Folly Brook Dike	0	April 1956.
Conduits: Folly Brook	0	Do.

JUSTIFICATION

The Folly Brook unit is an extension of the completed modifications for Hartford, Conn., which provide protection for the principal industrial areas of the city as well as important portions of municipal, commercial and residential developments. The area to be protected by the Folly Brook modification consists of approximately 100 acres of industrial, commercial and residential development within Hartford and the adjoining town of Wethersfield that are subject to flooding from high runoff in the brook and backwater from the Connecticut River. The local protective works were designed to protect against a project flood reduced by a system of upstream reservoirs. They were constructed to a higher elevation, however, at the expense of the city, in order to provide better protection against the design flood, pending completion of the reservoir program. The uncompleted reservoir program in the Connecticut River Basin presents a serious threat to the Folly Brook area and prevents the city of Hartford from realizing the additional protection they desire and for which they have expended considerable sums to date.

Several important factories which handle defense contracts are located in the Hartford area and two electric power stations which furnish electric energy to metropolitan Hartford and the aforementioned factories are located in the area.

The Hartford project has been completed at a total cost of $8,999,700 (Federal $6,457,200 and local $2,542,500).

Fiscal year 1956.—The requested amount of $263,000 will provide Federal funds required to initiate and complete the Folly Brook modification.

Mr. MARSHALL. We will appreciate a brief statement regarding this project.

Colonel STARBIRD. The Folly Brook project, sir, is carried as a new start. I believe, sir, if you will look at your map, I can best explain that it is a continuation of a portion of a project already completed.

On your map, shown in heavy black, is the portion of the Hartford protective work already completed. Outlined in red at the lower end of your map, is the Folly Brook portion of the work, the portion which you are considering today.

The latter consists of a dike 700 feet long, together with a pressure conduit to carry the small Folly Brook through the dike in times of high flow.

The project was authorized by the Flood Control Act of 1950. The Folly Brook section has a benefit-to-cost ratio of 1.9 to 1.

The estimated cost to the Federal Government of the Folly Brook addition is $303,000; $40,000 has been appropriated to date, leaving $263,000 in Federal appropriations needed to complete the project.

This is one of those projects for which local cooperation is required. In this case the local interests will be expected to pay for the lands and rights-of-way and, in fact, they have already secured those at an estimated cost of $13,000. They will also take care of the annual maintenance and operation, at a cost of $2,900. In addition to that, there is in this case a slightly higher degree of protection than the Federal Government recommended. You will note on your justification sheet that they are going to pay in cash $189,000 in order to get that higher degree of protection.

Mr. MARSHALL. How much of the estimated benefits are due to other things than a reduction in flood damage on this project?

Colonel STARBIRD. The major portion of the benefits are due to a reduction in flood damage, sir, however, there is a slight enhancement benefit involved.

Adams and North Adams, Mass.

The next projects are Adams and North Adams, Mass. We will insert pages 50, 51, and 52, and 56, 57, and 58 of the justifications at this point in the record.

(The pages referred to follow:)

Adams, Mass. (Continuing)

Location.—Local protection for the town of Adams, Berkshire County, in northwestern Massachusetts, on the Hoosic River about 60 miles above its junction with the Hudson River.

Authorization.—1941 Flood Control Act.

Benefit-cost ratio.—1.25 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$5,580,000	
Estimated local cash contributions	0	
Estimated project cost	5,580,000	
Appropriations to June 30, 1954	844,000	
Appropriations for fiscal year 1955	560,000	
Appropriations to date	1,404,000	25
Appropriations requested for fiscal year 1956	1,900,000	59
Balance to complete after fiscal year 1956	2,276,000	

PHYSICAL DATA

Concrete walls: Average height, 14 feet; length, 5,100 feet.

Concrete channels: Average height, 5.5 to 10 feet; length, 7,500 feet; width, 40 to 35 feet.

Earth channels: Length, 5,500 feet; average width, 80 feet.

Levee: Average height, 14 feet; length, 5,400 feet.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Unit 1. Channel excavation, drop structure and stilling basin, paving, and concrete walls and concrete channel in middle portion of project.	100	
Unit 2. Channel excavation and concrete channel along Tophet Brook	100	
Unit 3. Channel excavation and floodwalls downstream of completed work for about 800 feet.	2	July 1955.
Unit 4. Channel excavation and concrete channel upstream of completed work to upstream limit of project.	0	June 1957.
Unit 5. Channel excavation, levees, floodwalls, and check dams, from downstream end of unit 3 to downstream limit of project.	0	Do.
Entire project	18	Do.

JUSTIFICATION

The project will provide protection to the town of Adams against Hoosic River floods. Protection will be afforded to the flooded area comprising about 65 percent of the industrial and commercial section and about 15 percent to the residential section of the town. Protection will be afforded to 4 major industries, 125 commercial establishments, 500 residences, 8 public buildings, public roads, and public utilities and services. During the floods of 1927, 1936, 1938, and 1948, the town suffered flood damages in excess of $4 million which could have been prevented had the protective works been constructed. Annual flood control benefits are estimated at $343,000. Early completion of the project is essential to prevent serious recurring flood damages. The Commonwealth of Massachu-

setts and the town of Adams have furnished the lands, easements and rights-of-way for the completed units of the project, have expended funds for the required utility relocations, and bridge modifications, and have provided assurances of local cooperation in the entire project. The total cost to local interests is estimated at $647,000.

Fiscal year 1956.—The requested amount of $1.9 million will be applied to:

Unit 3. Complete construction which was initiated in fiscal year 1955, for floodwalls	$60,000
Unit 4. Initiation of construction, concrete channel, upstream of completed work	1,130,000
Unit 5. Initiation of construction, channel excavation, levees, floodwalls, and check dams, downstream of unit 3	575,000
Supervision and administration	135,000
Total	1,900,000

NORTH ADAMS, MASS. (RESUMPTION)

Location.—Local protection for the city of North Adams, Berkshire County, Mass., on the North Branch, South Branch, and Hoosic River, about 52 miles above its junction with the Hudson River.

Authorization.—1936 and 1941 Flood Control Acts.

Benefit-cost ratio.—1.20 to 1.0.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$15,700,000	
Estimated local cash contribution	0	
Estimated project cost	15,700,000	
Appropriations to June 30, 1954	1,183,000	
Appropriations for fiscal year 1955	0	
Appropriations to date	1,183,000	8
Appropriations requested for fiscal year 1956	750,000	12
Balance to complete after fiscal year 1956	13,767,000	

PHYSICAL DATA

Concrete walls: Average height, 23 feet; length, 1,870 feet.
Concrete channel: Length, 10,900 feet; width, 45–80 feet.
Earth channel: Length, 17,900 feet; average width, 95 feet.
Levee: Average height, 17 feet; length, 11,300 feet.

Status, Jan. 1, 1955

	Percent	Completion schedule
Unit 1. Channel excavation, earth levees, concrete walls, drop structure and stilling basin, and concrete channel, on Hoosic River (main stream).	100	
Unit 2. Channel excavation, and concrete channel on Hoosic River (main stream).	100	
Unit 3. Channel excavation, and concrete channel on North and South Branches.	0	November 1957.
Unit 4. Channel excavation, concrete channel, concrete walls, excavation of debris basin, and construction of dam on North Branch.	0	October 1958.
Unit 5. Channel excavation, concrete channel, and concrete walls, levees, and dam on South Branch.	0	June 1959.
Unit 6. Channel excavation, levees, concrete walls, dam and stilling basin on the Hoosic River (main stream).	0	October 1959.
Entire project	8	October 1959.

JUSTIFICATION

The project will provide protection for the city of North Adams against Hoosic River, North and South Branch floods. Protection will be afforded to the flooded area comprising about 85 percent of the industrial and commercial

section, and about 25 percent of the residential section of the entire city. Protection will be afforded to 13 major industries, 570 commercial establishments, 580 residences, 7 public buildings, public roads, and public utilities and services. During the flood of November 1927, March 1936, September 1938, and December 1948, recurring damages aggregating about $13,700,000 were suffered by the city. These damages would have been prevented had the project been constructed. The average annual benefits for the project are estimated at $893,000. Early completion of the project is essential to prevent recurring flood damages. The project provides flood protection to the Sprague Electric Co. plant, which is engaged in the manufacture of radar, electronic and other electrical equipment. The firm had extensive Government contracts during World War II, and is now performing research work for the Government which is in a classified category. The Commonwealth of Massachusetts and the town of Adams have furnished the lands, easements, and rights-of-way for the completed units of the project, have expended funds for the required utility relocations, and bridge modifications, and have provided assurances of local cooperation for the entire project. The total cost to local interests is estimated at $2,080,000.

Fiscal year 1956.—The requested amount of $750,000 will be applied to:

Unit 3. Initiation of construction on the North and South Branches involving channel excavation and construction of concrete channel	$515,000
Engineering and design	190,000
Supervision and administration	45,000
Total	$750,000

The funds requested for fiscal year 1956 will be used for the initiation of construction of a concrete channel (chute) under a continuing contract (unit 3) for 600 feet along the South Branch from the junction to the existing Johnson Dam, and for a distance of about 1,000 feet on the North Branch. These funds will also be used for the preparation of plans and specifications for units 5 and 6, the next units scheduled for construction. The completion of these plans for unit 5, and initiation of plans for unit 6 during 1956 are considered essential for the initiation of construction of unit 5 in fiscal year 1957, and the successful completion of the project within the scheduled time. The construction work that would be accomplished during fiscal year 1956 would afford protection to the plant of the Sprague Electric Co., manufacturers of radar, electronic, and electrical equipment; to about 30 residences along the North Branch; and to the Berkshire Gas & Electric Co. of the South Branch. The funds requested are the minimum necessary to carry on construction of unit 3 at an orderly and economical rate.

Mr. MARSHALL. Will you give us a brief statement regarding the first of these projects?

ADAMS

Colonel STARBIRD. Yes, sir. The Adams, Mass., project, is a continuing project. It is one which is already underway and the funds requested would be for the continuation of work in fiscal year 1956.

The project will furnish protection for Adams, a small city of approximately 13,000 persons.

Colonel STARBIRD. That city lies, sir, in a very narrow valley, so that high flood discharges cause extremely heavy damage in the city.

You can see from the map, outlined in pink, the area that was flooded by the flood of record. You can also see how much of the industry of the city is located in that flood plain, and also you can see that the city hall and the railroad station is located in the flood plain.

Our plan of work here, sir, calls for channel improvement along approximately 3 miles of channel through the city; also, for the construction of approximately 1 mile of levee, and 1 mile of concrete retaining wall where the channel cannot be improved to a position where the full maximum flows can be carried.

The estimated benefit-to-cost ratio of this project is 1.25 to 1.

The funds requested for fiscal year 1956 in the amount of $1.9 million will be used to carry on the contract awarded this year, which is just below the Y of the two streams. The funds will also be used to initiate construction upstream on the Hoosic River and downstream on the section already improved.

Mr. MARSHALL. When this work is complete, will it relieve all of the flood damage?

Colonel STARBIRD. It will take care of a flood, sir, approximately 25 percent higher than the flood of record. We believe that it will take care of the very rare floods. There might be floods where the project would not carry the full load.

Mr. TABER. Can you tell us anything about when the flood of record occurred?

Colonel STARBIRD. Yes, sir; the flood of record in this case occurred in 1938.

Mr. TABER. Has there been any since?

Colonel STARBIRD. Yes, sir; but while the flooding has been relatively infrequent, it has caused severe damage here. After the 1938 flood, we had a flood in 1948 which caused damages of $800,000. There has been only very light damage since that time.

Mr. TABER. You have already spent something in the neighborhood of $1.4 million, or you have had that amount available; have you not?

Have those expenditures done anything to stop the flood damage?

Colonel STARBIRD. They have provided for an improved situation within the area shown in black on your small map, sir. In other words, directly at the confluence where Tophet Brook joins the Hoosic River. The completed work is outlined in black at this point, and is labeled units 1 and 2. However, until such time as the downstream section is fully improved, we cannot receive full benefits from the work already accomplished, and unless the upstream section is also improved, full protection—that is, protection to the full city—will not be given.

You will note from this map how much of the industry actually lies above the Y at Tophet Brook, sir.

Mr. TABER. Was that industry at the upper part of the river damaged seriously?

Colonel STARBIRD. It was; yes, sir. As you can see from here, we have the mill sections in the area up in here, sir, and the entire pink area was flooded.

Mr. TABER. This does not show what has been done and what is to be done?

Colonel STARBIRD. No, sir; it does not. The part that has been done is just this section at the Y right here.

Mr. TABER. It comes over as far as this point, and goes on down?

Colonel STARBIRD. Yes, sir; that is right. It goes down, roughly, to this point, sir.

The work presently underway, with a contract awarded in October 1954, is a short section of about two-thirds of a mile below the work already accomplished.

Mr. TABER. Which is the upper part?

Colonel STARBIRD. The upper part is to your right, here, sir. The work recommended for fiscal year 1956 is a continuation of further improvement downstream, together with the initiation of the work upstream.

Mr. TABER. You have a dam up here. Has that dam been built?

Colonel STARBIRD. That is not a retention dam for the control of floods, sir. There is a small stilling basin and dam at the head of each section, basically, to catch debris and to give you a transition into the improved channel.

Mr. TABER. You have a dam down at the end of the map here in front of me.

Colonel STARBIRD. There is, again, a proposed drop structure and dam in there. That is not a dam for the retention of floodwaters, but merely to give you a drop in your channel.

Mr. KIRWAN. Most of the flood protection is from levees; is it not?

Colonel STARBIRD. It is protection, basically, by channel improvement, with leveeing wall where sufficient channel cannot be gotten.

NEW ENGLAND RESERVOIRS

Mr. KIRWAN. Are there many places in New England where you can build a dam or reservoir?

Colonel STARBIRD. There are quite a few sites, sir, where dams can be built. Generally, of course, they are adequate for only a smaller dam. For example, the plan for control of the Connecticut River consists of 22 reservoirs. Of those planned, only five have been completed to date.

Mr. KIRWAN. On a gallon basis, how much would each reservoir hold?

Colonel STARBIRD. They vary, sir. I would imagine that the average capacity is somewhere in the neighborhood of 20,000 acre-feet, sir.

Mr. KIRWAN. What would that be in gallons?

Colonel STARBIRD. That would be 20,000 times 325,000, or about 6½ billion gallons.

Mr. KIRWAN. That is a fair-sized reservoir; is it not?

Colonel STARBIRD. Yes, sir; as contrasted with many water supply reservoirs, which are small structures, as a rule.

Mr. KIRWAN. That is in New England?

Colonel STARBIRD. Yes, sir.

Mr. KIRWAN. That is all, Mr. Chairman.

NORTH ADAMS

Mr. TABER. North Adams is above Adams; is it not?

Colonel STARBIRD. North Adams is to the north, but the river flows from south to north, and then loops and flows west. It is confusing in that actually North Adams is downstream from Adams.

Mr. TABER. Is there quite a little distance between one and the other?

Colonel STARBIRD. I think there is a distance of about 10 miles between the 2 towns, sir.

It is probably about 15 river miles, but it looks to be only about 10 miles airline.

Mr. TABER. There is no water storage involved in this project?

Colonel STARBIRD. There is none, sir.

Mr. TABER. Your expected cost of the North Adams project is something like $15.7 million, and the prospective cost of the Adams project is something like $5 million?

Colonel STARBIRD. Yes, sir.

FLOOD DAMAGES

Mr. TABER. I wonder what sort of damage picture you can present?

Colonel STARBIRD. North Adams is, of course, a much larger city, sir, and has a population of approximately 22,000. There, the damages that would occur again if the major floods of recent record occurred, would be about as follows:

The recurrence of the 1927 flood would give $5 million worth of damage today; that flood of 1936 would be about $2.3 million, and that of 1938 about $5.1 million; that of 1948 $1.4 million; and the 1950 flood recurring would cause slightly less than $500,000 worth of damages.

In this area there are about 538 acres subject to flooding, and there are property values of around $37 million, sir—85 percent of the industry and 25 percent of the residential population are within the flood plan area. Here, again, I have a picture which shows the extent of the flood plain, and you will note that the river itself is relatively confined, with the city laterally along the river.

Mr. TABER. The damage figures which you have given are combined figures?

Colonel STARBIRD. No, sir; I was just reading from the North Adams figures.

Mr. TABER. At Adams itself, how much do you get on that?

Colonel STARBIRD. At Adams, sir, with the recurrence of floods which have occurred in recent years, the 1927 flood would give damages now of $517,000; that of 1936 approximately $520,000; that of 1938, $2,710,000; that of 1948, $930,000; with only a scattering in the 1950 flood of around $11,000.

Mr. TABOR. What is your benefits-to-cost ratio on the Adams project?

Colonel STARBIRD. On the Adams project, sir, it is 1.25 to 1 and on the North Adams Project, it is 1.2 to 1.

Mr. TABER. That is all, Mr. Chairman.

OPERATIONS AND MAINTENANCE

Mr. MARSHALL. The next item which we shall discuss is the one entitled "Operations and Maintenance," where you have a total of $4,497,400.

At this point in the record we will insert pages 61 through 64 of the justifications.

(The pages referred to follow:)

NEW ENGLAND BASIN

JUSTIFICATION OF ESTIMATE

1. Navigation

(*a*) *Channels and harbors.*—The work to be accomplished under this activity consists of maintaining the navigation channels, harbors, and anchorages of coastal harbors and waterways by means of dredging, operation of navigation structures, and repairing harbor jetties and breakwaters; and periodic inspections and surveys to determine the condition of the projects for programing purposes and providing navigation interests with adequate information on existing channel conditions; all as authorized in the laws adopting river and harbor projects.

The budget estimate of $4,359,000 for fiscal year 1956 is required for essential maintenance work on 23 channel and harbor projects named in the list which follows. The projects listed have been subjected to an economic analysis and

determined that continuing maintenance is justified. The amount of funds appropriated in recent years for this activity has not been sufficient to provide for the adequate and timely maintenance of all justified projects and has resulted in a substantial backlog of work, particularly structural repairs and the maintenance of moderate and shallow-draft navigation channels. This condition continues to exist.

Tentative allocation, fiscal year 1956

Connecticut:	
Bridgeport Harbor	$280,000
Connecticut River below Hartford	260,000
New Haven Harbor	370,000
Norwalk Harbor	100,000
Stamford Harbor	50,000
Massachusetts:	
Boston Harbor	10,000
Cape Cod Canal	680,000
Chatham (Stage) Harbor	50,000
Gloucester Harbor and Annisquam River	80,000
New York:	
Bay Ridge and Red Hook Channels	180,000
East River	70,000
East Rockaway Inlet	70,000
Fire Island Inlet	50,000
Hudson River	460,000
Hudson River Channel	270,000
Long Island Intracoastal Waterway	140,000
Newtown Creek	180,000
New York Harbor	460,000
New York Harbor, collection of drift	250,000
Westchester Creek	140,000
Rhode Island:	
Block Island Harbor of Refuge	60,000
Great Salt Pond	50,000
Point Judith and Point Judith Pond	70,000
Condition surveys	29,000
Total channels and harbors	4,359,000
Total navigation	4,359,000

2. Flood control

(*a*) *Reservoirs.*—The budget estimate of $136,600 provides for the operation and ordinary maintenance of nine flood-control reservoirs in the New England Basin, and nondeferrable rehabilitation work. The amount requested in fiscal year 1956 is approximately $1,900 less than the amount available in fiscal year 1955, and is the minimum necessary for adequate and efficient operation and maintenance of the projects.

Tentative allocation fiscal year 1956

Connecticut: Mansfield Hollow Reservoir	$18,000
Massachusetts:	
Birch Hill Reservoir	12,000
Knightsville Reservoir	15,000
Tully Reservoir	13,000
New Hampshire:	
Blackwater Reservoir	5,000
Edward MacDowell Reservoir	16,000
Franklin Falls Reservoir	27,600
Surry Mountain Reservoir	17,000
Vermont: Union Village Reservoir	13,000
Total flood-control reservoirs	136,600

(*b*) Other (including channel-improvement projects, miscellaneous maintenance items, and inspection). The budget estimate of $1,800 provides for inspection during the fiscal year of 12 completed projects within the basin.

Tentative allocation fiscal year 1956

Inspection of completed works	$1,800
Total flood control	138,400

3. Multiple-purpose projects including power

None.

Grand total New England Basin	$4,497,400

Mr. MARSHALL. Will you please tell us just what activities are covered by the term "Operations and maintenance"?

General ITSCHNER. Colonel Powers will handle this part of the testimony, sir. He is Chief of the Operations Division, Civil Works.

Colonel POWERS. The appropriation for "Operations and maintenance" is divided into subclassifications of navigation, flood control and multipurpose.

In the New England Basin we have requirements for funds in navigation and flood control only.

In navigation, the main utilization of the funds is for the continued survey of the existing channels and harbors; for dredging the channels in order to maintain adequate depths for the navigation using the channels; for the maintenance and rehabilitation of control structures such as jetties, and breakwaters; and on the Cape Cod Canal, funds for traffic control and the maintenance operation of bridges and control structures there.

In flood control, there are nine reservoirs. The "Operations and maintenance" funds requested are for the necessary maintenance of the structures previously built, such as access roads, and facilities at the intsallations.

About $1,800 is included also for the inspection of completed local-protection projects which have been built and turned over to local agencies for continued operation and maintenance. We are required to inspect the adequacy of their maintenance each year.

BASIS FOR ALLOCATION BY PROJECT

Mr. MARSHALL. What facts or assumptions do you use in a breakdown of these projects as far as costs are concerned?

Colonel POWERS. The requirements in channels and harbors—particularly, the requirements for maintenance—are based in some cases on known shoaling of the channels, and known deterioration of the breakwaters and jetties. Then, we must also consider the normal experience of shoaling, continued deterioration which occurs from year to year based on freshets, and other various effects of the weather and also the acceleration of deterioration in structures by reason of the fact that repairs have been put off from year to year.

In the fall of a given calendar year all of the maintenance requirements for the projects which are expected to be realized by the following year, are estimated and evaluated throughout the country. We make tentative allocations at that time and submit them in the budget estimate.

In April all of these requirements are reviewed again, with the latest information that is available, concerning what has happened in the interval, and in the first week of May, we submit to the committee again a revised tentative allocation, based upon the latest current information as to the condition of the various channels and harbors.

COMPARISON OF BUDGET WITH PREVIOUS YEARS

Mr. MARSHALL. How does the amount requested for "Operations and maintenance" compare with the last 5 years?

Colonel POWERS. With respect to the New England Basin, I do not have the data available as to the comparative amounts for the past 5 years, but for 1954 obligations for channels and harbors work amounted to $3,374,000. It is estimated that our obligations for 1955 will be $4,350,000. We are requesting $4,359,000 for fiscal year 1956.

Mr. MARSHALL. Could you submit for the record the costs for the last 5 years?

Colonel POWERS. Yes, sir.

(The information requested follows:)

Funds obligated for operations and maintenance, New England Basin, fiscal years 1952 through 1956

Fiscal year 1952, actual	$2,748,800
Fiscal year 1953, actual	2,791,800
Fiscal year 1954, actual	3,523,800
Fiscal year 1955, estimated	4,490,700
Fiscal year 1956, estimated	4,533,000
Budget request, fiscal year 1956	4,497,400

Mr. MARSHALL. The committee will stand adjourned until 10 o'clock tomorrow morning.

TUESDAY, APRIL 26, 1955.

GREAT LAKES-ST. LAWRENCE AREA

Mr. MARSHALL. The committee will be in order. The next area we will consider is the Great Lakes and St. Lawrence. The total amount in the 1956 budget for this area is $24,634,400. We will insert in the record at this point the summary breakdowns and the table showing the unobligated balances by project.

(The information is as follows:)

GREAT LAKES-ST. LAWRENCE

Budget estimate, fiscal year 1956, Corps of Engineers

General investigations	$400,400
Advance engineering and design	182,000
Construction	15,448,000
Operation and maintenance	8,604,000
Total	24,634,400

Great Lakes-St. Lawrence Basin

Project	June 30, 1954		Mar. 31, 1955		June 30, 1955 (estimate)	
	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance
Navigation:						
Calumet-Sag Channel	0	0	0	0	0	0
Indiana Harbor	0	0	0	0	0	0
St. Mary's River (lift bridge, etc.)	0	0	0	0	0	0
Duluth-Superior Harbor	−$6,500	−$6,500	$918	$241,770	0	$25,000
Buffalo Harbor	956	7,935	67,534	543,567	$30,000	110,000
Cleveland Harbor	19,705	4,335,877	235,061	2,379,930	0	0
Shore protection: Presque Isle Peninsula	0	0	0	0	0	0
Flood control: Wellsville, N. Y.	0	0	0	0	0	0
Niagara remedial works	37,204	586,200	776,052	902,363	500,000	500,000

Mr. MARSHALL. Colonel Allen, I believe you have a statement to present.

GENERAL STATEMENT

Colonel ALLEN. Yes, sir.

The Great Lakes including the St. Lawrence River down to the international boundary borders eight States from Minnesota to New York. The total drainage area above Ogdensburg, N. Y., is 298,000 square miles including 95,000 square miles of water surface. About 114,000 square miles of land area of the basin and 61,000 square miles of water area of this basin are in the United States. The United States shoreline of the Great Lakes and their connecting rivers is about 3,970 miles long.

The Great Lakes and their connecting rivers form a natural economical water transportation system for a region which abounds in natural resources such as iron ore, stone, coal, petroleum, fertile agricultural areas, and forests. The lakes themselves are deep and improvements for navigation have been required only in the relatively shallow connecting rivers and at harbors.

Annual commerce on the Great Lakes during the past 10 years, which has averaged over 200 million tons, is equal to about 28 percent of the total waterborne commerce of the United States in 1953. The Great Lakes are icebound during 4 winter months and this tonnage must be moved in the remaining 8 months of the year.

The Federal program for development of the channels and harbor improvements on the Great Lakes for navigation has been continuous since the initial work by the United States in 1824. From a comparatively small and scattered beginning on Lakes Erie and Ontario, the Federal program on the Great Lakes has grown to its present scope and importance.

The large and relatively steady outflows from the Great Lakes, particularly in the Niagara and St. Lawrence Rivers combined with the high heads provide a tremendous potential for hydroelectric power development.

NAVIGATION

The overall project for the Great Lakes-St. Lawrence Basin provides for the deepening of the connecting channels between Lakes

Superior and Erie including construction of locks in the St. Marys River and for development of approach channels and harbors for deep-draft vessels. Provision has also been made for harbors for recreational craft and for commercial fishing fleets. The projects on the Great Lakes include 37 major commercial ports for deep-draft traffic, 31 minor commercial ports for medium-draft traffic, 34 harbors for light-draft recreational and commercial fishing traffic, and 5 ship locks. Project depths in the major ports vary from 20 to 25 feet, those in the minor ports from 16 to 20 feet and those ports used by recreational and fishing traffic are generally about 10 feet in depth. The connecting channels provide depths of at least 25 feet for downbound traffic and 21 feet for upbound traffic.

The major portion of the authorized developments has been completed for deep-draft navigation. The connecting channels between Lakes Superior and Huron and Lakes Huron and Erie have been deepened to provide a minimum depth of 25 feet in the downbound channels and a minimum depth of 21 feet in the separate channels. All major harbors have been constructed and are in use but many are now restrictive in depth and maneuver areas to accommodate the larger vessels of the present fleet.

There remains to be completed such major items as the replacement of the Poe lock and the removal of Bridge Island at St. Marys Falls Canal, Mich. There also remain to be constructed 21 harbors for light-draft recreational and fishing craft.

Works of improvement under construction at this time which will be presented in detail later include the deepening of the Superior front channel at Duluth-Superior Harbor, deepening of the Buffalo River at Buffalo Harbor, N. Y., deepening of Cuyahoga River and modification of bridges at Cleveland Harbor, Ohio.

New starts scheduled for fiscal year 1956 are the widening of Indiana Harbor Canal, Indiana Harbor, Ind., removal of Bridge Island and the construction of a new lift bridge over the South Canal at St. Marys Falls Canal, Mich., and the Cal-Sag Canal project. This latter will provide a link between the Illinois Waterway and the Great Lakes.

Presently authorized depths in the connecting channels are inadequate for present and prospective Great Lakes commerce. However, the Corps of Engineers has completed a report which has been submitted to the governors of the bordering Great Lakes States for their comments prior to submission of the report to Congress which recommends modification of the existing project to provide for a safe draft of 25.5 feet in all the connecting channels with the ruling lake at low water datum.

FLOOD CONTROL

There are two types of flood problems in the basin. One is flooding on many of the numerous tributaries. The other is the flooding of low-lying areas bordering the lake shores which are flooded by high lake levels including the effect of wind and waves on the lakes surface.

One reservoir project has been completed, and several small local protection projects involving channel rectification cutoff channels, diking and retention reservoirs, have also been completed.

Eleven local protection projects remain to be completed.

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POWER

The Great Lakes-St. Lawrence Basin, with its vast water reservoir area is a potential source for the generation of a large volume of electrical energy. The Federal Government has constructed, and is operating, one hydroelectric powerplant on St. Marys River at Sault Ste. Marie, Mich., with a generating capacity of 16,800 kilowatts.

Pursuant to a resolution of the Committee on Public Works of the United States Senate dated June 5, 1951, the Corps of Engineers has prepared a study to develop the best plan for development of the power potential of the United States share of the Niagara River, an international stream. This report is now under consideration by the Board of Engineers for Rivers and Harbors.

The power potential in the International Rapids section of the St. Lawrence River is being developed jointly by the Hydroelectric Power Commission of Ontario and the New York State Power Authority. The total installed capacity to be divided equally between the two power entities will be about 1,800,000 kilowatts.

BEACH EROSION

Many reaches of the shores of the Great Lakes are subject to serious erosion damage particularly during periods of high lake levels. Dur ing the recent period of high lake levels when unusually stormy weather prevailed from the spring of 1951 to the spring of 1952, the damage along the United States shores of the Great Lakes is estimated to have been in excess of $61 million of which $50 million was caused by wave action and $11 million by flooding of low lying areas.

There have been authorized for construction 11 cooperative beach-erosion projects in 4 States, aggregating a Federal expenditure of in excess of $5 million. One of these projects on Presque Isle Peninsula at Erie, Pa., is scheduled as a new start in the 1956 budget with an initial allotment of $600,000. Several additional areas where serious erosion now exists are being studied at this time.

Because of the serious damage resulting from shore erosion and flooding along the shores of the Great Lakes during the high lake stages then prevailing, the Public Works Committee of the House of Representatives on June 26, 1952, authorized a survey on the water levels of the Great Lakes to determine the feasibility of a plan of regulation of the Great Lakes that will best serve the interests of all water users; namely, shore property, navigation, and power. This report is in process and scheduled for completion in fiscal year 1957.

OTHERS—ST. LAWRENCE SEAWAY DEVELOPMENT CORPORATION

United States participation in the improvement of the International Rapids section, St. Lawrence River, for navigation purposes was authorized May 13, 1954. Responsibilty for construction and operation of the United States navigation features was vested in the St. Lawrence Seaway Development Corporation. On September 2, 1954, the Corporation requested the Corps of Engineers to act as the designing and construction agent for the project.

The mission of the Corps of Engineers is to plan for, design, and supervise construction of the project. Construction is scheduled to permit opening for navigation by September 1, 1958.

Planning is now well advanced and awards have been made on three major excavation contracts aggregating over $4 million and another major excavation contract will be awarded about May 1955.

CONCLUSION

The Great Lakes region is manifestly an integral and vital contributor to the national economy and national defense. Growth of the region's industrial complex has been materially assisted by the development of low-cost transportation on the waterways which tap the sources of raw material required for heavy industry. Continued development of the Great Lakes for navigation, power, and flood control, can be anticipated in order to aid an expanding economy.

General Investigations

Mr. MARSHALL. The next item is for "General investigations." This item for this area is $400,400. The details are set forth at pages 1 through 4 of the justifications, which we will insert in the record at this point.

(The information is as follows:)

GREAT LAKES-ST. LAWRENCE DRAINAGE AREA

JUSTIFICATION OF ESTIMATE

1. Examinations and surveys

(*a*) *Navigation studies.*—The amount of $60,500 is requested for prosecution of 9 studies in the Great Lakes-St. Lawrence Basin during fiscal year 1956. This amount will permit completion of 4 reports and progress on 5 others.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Indiana: Burns Waterway	$37,000	$11,000	$15,000	$11,000
Michigan:				
Grand Haven Harbor	6,000	4,600	1,400	0
Mackinaw City	6,800	6,300	500	0
Rouge River	28,800	12,800	6,000	10,000
Minnesota: Duluth-Superior Harbor, Minn. and Wis	125,700	15,200	25,000	85,500
Ohio:				
Cleveland Harbor	14,500	10,300	4,200	0
Conneaut Harbor	43,900	7,600	6,500	29,800
Vermilion Harbor	16,500	11,400	1,100	4,000
Wisconsin: Sturgeon Bay and Lake Michigan ship canal	2,200	1,400	800	0
Total	281,400	80,600	60,500	140,300

(*b*) *Flood-control studies.*—The amount of $29,900 is requested for prosecution of 5 studies in the Great Lakes-St. Lawrence Basin during fiscal year 1956. This amount will permit completion of 1 report and progress on 4 others.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Indiana: Maumee River, Ind. and Ohio	$313,000	$176,600	$9,800	$126,600
Michigan:				
Au Gres River	28,600	2,600	5,000	21,000
Grand River	184,900	15,900	6,500	162,500
Kawkawlin River	20,200	2,600	2,500	15,100
Ohio: Sandusky River	37,000	30,900	6,100	0
Total	583,700	228,600	29,900	325,200

(c) *Special studies.*—**The amount of $300,000 is requested for continuation of the study of the water levels of the Great Lakes.**

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Great Lakes water levels	$1,016,000	$391,500	$300,000	$324,500

(*d*) *Beach erosion cooperative studies.*—**The amount of $10,000 is requested for completion of 1 study in the Great Lakes-St. Lawrence drainage area.**

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Ohio: Michigan line to Marblehead	$10,000	0	$10,000	0
Grand total	1,891,100	700,700	400,400	$790,000

Great Lakes Water Levels

Mr. Marshall. The largest item of $300,000 is for a special study of the Great Lakes water levels. What is the relationship between the Corps of Engineers and the International Joint Commission, United States and Canada, on this item?

Colonel Allen. May I ask Mr. Brennan to answer that?

Mr. Brennan. The Corps of Engineers has been working with the International Joint Commission and various joint engineer boards in this Great Lakes water level study, sir, but fundamentally, the primary purpose of the study is not international in scope; it is for the determination of the possible protection of the shores on the American side, and for our determination of what control measures can be placed into operation which might affect the levels. If the levels are increased, of course, it is of benefit to navigation because considerably more capacity can be obtained in the shipping with deeper drafts. If it is decreased, however, it is of benefit to the shore areas which are subject to erosion and to attack by wave action.

Mr. Marshall. Is Canada carrying on a similar sort of study?

Mr. Brennan. No, sir; Canada is not carrying on a specific study on the Great Lakes.

Mr. TABER. Wasn't there a dam on the St. Lawrence that was washed out last year?

Mr. BRENNAN. That is Gut Dam, I believe, sir.

Mr. TABER. I guess so.

Mr. BRENNAN. Yes, sir.

Mr. TABER. Has that relieved the flooding picture any?

Mr. BRENNAN. No, sir; not materially. The effect of Gut Dam is insignificant on the lake level, lowering the high-water level on Lake Ontario about 6 inches.

USES OF DATA TO BE GATHERED

Mr. MARSHALL. What use do you expect to make of this data?

Mr. BRENNAN. There will be two major uses, sir. One is to determine if there can be control works placed at the crucial points, such as the St. Marys River; the Saint Clair River, and the Detroit River which might have an effect on the lake level so that the high lake levels during high-water periods, during that stage of the cycle, can be kept lower; and at the same time during low water there can be a retention of storage which would be helpful to navigation and power development at Niagara and at the International Rapids section of the St. Lawrence.

The other major use of the data would be in connection with the protection of particular areas from inundation along the Great Lakes by means of levees or dikes.

I should say, sir, on that part of the study dealing with inundation, the Congress last year did not make a determination as to whether the United States should be engaged in the protection of these lake areas until the Congress had established some kind of general policy on that matter. Several projects which were proposed in the hearings on the 1954 omnibus rivers and harbors and flood control bill were rejected by the Congress on that basis. As a result of that declaration of policy we will not proceed further with the study of local protection works and we will not need some of the funds requested.

Mr. MARSHALL. Has any effort been made to encourage Canada to cooperate on this sort of a study, since they are also a benefactor from this data that is to be gathered?

Mr. BRENNAN. Sir, the studies of the International Joint Commission have encompassed this particular subject.

I would like to ask the chairman if the aspects of the matter dealing with the International Joint Commission could be delayed for about an hour. We have Mr. Weber, who is one of the United States Commissioners of the International Joint Commission, and who is a special assistant with the Corps of Engineers, due to appear here then, and he is more familiar with the IJC aspects of the matter.

Mr. MARSHALL. All right.

PREVIOUS EXPENDITURES ON PROJECT

Mr. KIRWAN. Is this the first time that money has been asked for general investigations of the water level?

Mr. BRENNAN. No, sir. There has been money available during 1955 and 1954—in fact, going back to 1952.

Mr. KIRWAN. Is 1952 the first time you asked for money for water level investigations?

Mr. BRENNAN. For this particular study, sir.

Mr. KIRWAN. This particular study is mostly for erosion, is it not? A big part of it is.

Mr. BRENNAN. Not exactly erosion, sir. A large part of it is for the investigation of the flooding of low lands along the lake, navigation, power, recreation, and other purposes.

Mr. KIRWAN. You stated awhile ago that if the water is high it is better for transportation.

Mr. BRENNAN. Yes, sir.

Mr. KIRWAN. But at the same time it harms the shore?

Mr. BRENNAN. That is correct, sir.

Mr. KIRWAN. That was your statement.

The reason I mention it is that the original marker which stood dividing the States of Ohio and Pennsylvania has now moved back 3 miles from where it was first planted; 3 miles of the finest earth on the earth went into Lake Erie.

I have seen myself, with my own eyes, an improved highway with houses on it which was there 1 year and was not there the next year.

We have been very, very neglectful of our own shores. I am not blaming you people; I am blaming the Congress.

I am 65 miles away from Lake Erie, but I used to represent the Lake Erie area. I do not do so any more. Mr. Bolton does.

I have seen the damage and the destruction that went on on Lake Erie along the shore. Canada does not have the same stake in this that we have, because the water coming down from Canada is not going to bother the Canadian shores like it does ours. We are the ones who have had to spend the money.

The shore damage you stated, I believe, was $50 million?

Mr. BRENNAN. Yes, sir; 50 million shore damage and 11 million inundation damage on the Great Lakes.

Mr. KIRWAN. That would almost pay for the break wall from Buffalo down to Ashtabula. There they could go in safety with barges and everything, back of that wall along there. Now they are in safety and they transport freight down only on barges, not on boats.

We are the most wasteful Nation in the world. We think we are economy-minded when we do not spend a few dollars. It is not economy.

Mr. BRENNAN. Well, sir, those three projects I mentioned were in the vicinity of Detroit and Toledo. They consisted of levees and seawalls.

Mr. KIRWAN. I am speaking of the Great Lakes. I am speaking of the $300,000 you asked for investigation of water levels.

DISCONTINUANCE OF STUDY OF DAMAGE TO SHORE PROPERTIES

Mr. BRENNAN. Yes, sir. I wanted to emphasize the fact that we are no longer studying the damage to the shore properties because of the action of the Public Works Committees and the Congress as

a whole in the 1954 omnibus bill. Until there is an expression of the desire of Congress with respect to the position of the Corps of Engineers——

Mr. KIRWAN. This is my opinion. I do not think that the Public Works Committees, if they ever went up to Lake Erie and got a look at the houses propped up today, where they are building retaining walls of concrete, would feel that way. It will only be a few years until they go the same voyage as the rest. They are fine homes, some of them costing $50,000 or $75,000. It will only be a couple of years until they dive into the lake.

Mr. BRENNAN. The committee members, sir, all expressed their interest in the problem and pointed out carefully that they were not questioning the merits of or the need for the protection, but they were basing their rejection of the projects on the fact that they felt the Congress should declare itself with respect to the Federal interest in floods coming from high lake levels rather than from the commonly accepted river floods.

Mr. KIRWAN. Whatever it comes from, the American taxpayer is the fellow who is going to pay that money to try to save the homes.

Mr. BRENNAN. That is right.

Mr. KIRWAN. He is taxed enough now, but there are people along the lake all the way from Buffalo to Toledo. I am speaking of the one lake; I do not know the details about the other lakes. I am speaking of the conditions along one lake I have seen with my own eyes. As you have said there, the damage was $50 million.

Mr. BRENNAN. Yes; for shore damage on the Great Lakes.

Mr. KIRWAN. This whole thing we are talking about, the improvements and everything, only cost $24 million, which you have in this Great Lakes project now for this year. It comes to $24 million, yet in the 1 year the damage up there was $50 million. That is all.

ADVANCE ENGINEERING AND DESIGN

Mr. MARSHALL. The next item we have is for "Advance engineering and design," for which a total of $182,000 is budgeted for this area. We will insert in the record at this point pages 5, 6, and 7 of the justifications.

(The information is as follows:)

GREAT LAKES—ST. LAWRENCE

JUSTIFICATION OF ESTIMATES

Advance engineering and design

Funds in the amount of $182,000 will be applied to advance engineering and design on 4 projects in the Great Lakes-St. Lawrence drainage basin. Three of these projects will be brought to the stage where construction can be initiated. The 4 projects on which planning will be accomplished have a total estimated

cost of $14,320,000 and consist of 2 navigation projects and 2 flood-control projects.

Project	Total estimated Federal cost	Allotments prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Navigation projects:				
New York: Oswago Harbor	$2,560,000		$36,000	[1] $2,524,000
Ohio: Ashtabula Harbor (East Outer Harbor)	5,000,000		46,000	[1] 4,954,000
Total, navigation	7,560,000		82,000	7,478,000
Flood-control projects:				
Michigan: Battle Creek	4,210,000		60,000	[1] 4,150,000
Vermont: Wrightsville Reservoir (modification)	2,550,000	$45,000	40,000	2,465,000
Total, flood control	6,760,000	45,000	100,000	6,615,000
Multiple-purpose projects including power: None				
Reexamination of projects in "Deferred for restudy" category: None				
Grand total, advance engineering and design	14,320,000	45,000	182,000	14,093,000

[1] Sufficient planning funds will be available with the fiscal year 1956 request for the necessary preconstruction planning prior to requesting funds for construction.

Mr. MARSHALL. Is there any serious objection from any source to any of these projects?

Colonel STARBIRD. There is not any serious objection, sir.

Mr. MARSHALL. I presume that in this instance, as was true yesterday, all the assurances of local cooperation will be made before construction starts on all these projects?

Colonel ALLEN. These requests are for planning on Ashtabula and Oswego Harbor projects. As I mentioned yesterday, informal assurances have been received, but before construction is actually initiated formal assurances will be received.

Mr. MARSHALL. They will all be firmed up before construction starts?

Colonel ALLEN. Prior to construction; yes, sir.

Colonel STARBIRD. In the case of the two flood control projects, sir, on Battle Creek local interests have furnished informal assurances as late as last year during the authorization period, and they have actually advanced funds for the planning.

In the case of the Wrightsville Dam and Reservoir the State of Vermont took the initiative and furnished local assurance for the small amount of local cooperation required there.

KALAMAZOO RIVER

Mr. MARSHALL. Regarding the Kalamazoo River project, what would be the benefit-to-cost ratio if you took into consideration only the prevention of direct flood losses in calculating the benefits?

Colonel STARBIRD. The direct flood losses, sir, in that project are $204,000 out of a total of $398,000 annual benefit. That would be something just over half of the total benefit.

Using any such analysis would give a benefit-to-cost ratio somewhere in the neighborhood of .7 to 1.

However, I should like to point out in that connection, sir, that there are three types of benefit, that are used at various times to justify projects, for flood control benefits. The first are the direct benefits. The direct benefit is only the benefit from actual water contact of a feature or a structure. It, of course, does not represent the overall damage in the area. The indirect benefit is the cessation of wages, and the loss of industry that takes place in the immediate area adjacent to the flooded area. Secondary benefits are the benefits more removed. They are real; however, they are hard to estimate. They are things such as the loss of railroad transportation, the rerouting of train lines, and things like that. We do not count secondary benefits. They are too hard to estimate. They are a little intangible.

We do feel that the indirect benefits are real. In this particular case they are very real, because the Kalamazoo River joins Battle Creek in the city of Battle Creek. Throughout the period of development of that city the industry moved right in on the river bank. In fact, part of the project cost for local interest is moving that industry back from the river bank. When the floods occur that industry stops and it is a real loss to the community.

Oswego Harbor

Mr. Taber. What is the story on these harbor projects? What is the tonnage for Oswego Harbor?

Colonel Powers. 1,107,000 tons in 1953, sir.

Mr. Taber. You do not know what it was for 1954?

Colonel Powers. No, sir. The 1954 reports are not in yet, sir. In 1952 the tonnage was 994,000 tons.

Mr. Tabor. What did it consist of, mostly?

Colonel Allen. Grain and coal are the two principal commodities. That figure that you used, Colonel Powers, was through commerce.

Colonel Powers. That is correct. That is not the gross tonnage.

Colonel Allen. There is an additional receipts-and-shipments figure. The total commerce for Oswego in 1953 would be 3.3 million tons, including the commerce passing through and receipts and shipments.

Mr. Taeer. Are these figures for through freight or are they receipts and shipments?

Colonel Allen. The figures I gave you are combined; through commerce and receipts and shipments, 3.3 million.

Mr. Taber. What were the other figures?

Colonel Allen. Through traffic was 1.1 million in 1953. The difference between that and the 3.3 million, or 2.2 million, is the receipts and shipments in 1953. That has varied. In 1949 total commerce was 2.9 million tons. It has been on a slight increase since 1949.

Mr. Taber. What depth do you have now in that harbor?

Colonel Allen. The existing project in Oswego provides for a project depth of 21 feet.

Mr. Taber. What are you planning to do there?

Colonel Allen. The shippers using Oswego Harbor have sustained serious difficulties by reason of wave action within the harbor. The planning funds requested in this year would investigate and plan for a detached breakwater beyond the two existing breakwaters in

order to minimize the effect of wave action within Oswego Harbor proper. This planning we are doing would not improve the depth; it would merely improve conditions for mooring and navigating within the other existing breakwaters.

Mr. TABER. How much of a breakwater is planned?

Colonel ALLEN. It is a detached breakwater, planned on the order of 1,000 feet long out beyond the 2 existing breakwaters. It was authorized in the last act.

ASHTABULA HARBOR

Mr. TABER. Let us consider Ashtabula Harbor. What are you planning to do there?

Colonel ALLEN. The work at Ashtabula is an extension of the existing area available to commerce. We have an existing project in Ashtabula and this act would authorize extending the area available to ships to a depth of 25 feet. The depths available there now are considerably less than that.

Local interests have constructed—and expended considerable funds in the construction of—a new port and terminal facility. This would bring water of a depth of 25 feet to these new docks and terminals.

Mr. TABER. What is the traffic there?

Colonel ALLEN. I will give you that, sir. The traffic in Ashtabula in 1953 was 15 million tons; 11 million tons of it was iron ore. The balance was divided between coal, limestone, salt, etc. The limestone and salt are being used by the growing chemical industry which is moving to this part of Ohio.

Mr. TABER. What is the ratio of benefits to cost?

Colonel ALLEN. The b-c ratio at Ashtabula is 3 to 1.

Mr. TABER. What is it for Oswego?

Colonel ALLEN. At Oswego the b-c ratio is 1.3 to 1.

BATTLE CREEK, MICH.

Mr. TABER. What is the story on Battle Creek? That is a new project; is it not?

Colonel STARBIRD. That is a project that is not new in planning. The planning was initiated this year, sir, fiscal year 1955, with an advance by local interests in this case. The project is one for the protection of the business section of the city of Battle Creek. It consists of channel improvement and cutting of a diversion channel to carry the main flows of the Kalamazoo River around the more heavily built-up section of the city.

The project has an estimated Federal cost of $4,210,000, sir. Of course, this is just in the planning stage right now.

The estimated cost to the local interests is extremely heavy. They must provide the necessary lands, relocations, and maintenance and operation of the project upon completion. The estimated initial cost to them is $3,006,000, sir. Maintenance and operation costs are $15,000 a year. In addition there is minor land enhancement here. They must make a cash contribution toward that enhancement of $105,500.

The planning of this project was expedited for the reason that the city has made detailed plans for major rearrangement within the city

proper. That rearrangement includes the combining of 2 railroad lines into 1 basic line, the construction of new through highways, and a slum-clearance plan. All of these are dependent in some manner on the location of our channels. Therefore, the planning was pushed along, and the local interests appealed to representatives of both of the Appropriations Committees of Congress to have it pushed along.

Mr. TABER. What ratio of benefits to costs do you have there?

Colonel STARBIRD. 1.36 to 1, sir.

Mr. TABER. When did you have floods there?

Colonel STARBIRD. Sir, there is a minor nuisance flooding annually. The major flood of record occurred in 1947. At that time the flood was about two and one-half times the channel capacity. It flooded about 1,558 acres and caused damages based on the price levels then existing of $654,000.

Mr. TABER. What kind of damage?

Colonel STARBIRD. Sir, a little over 50 percent of the damage is direct through the flooding of installations or the flooding of property, primarily in the mills that are located along the river. This is a big cereal center. They also make boxes and paper products.

The remainder of the benefits are partially enhancement, sir, but the indirect damage that will be remedied I have already mentioned, which is the stopping of those mills and the loss of productive power during the period of the actual flood. Incidentally, in computing those indirect benefits, if a man can go out somewhere else and get alternate employment we do not count that as a loss. If a man loses his employment, of course, that is a loss.

Mr. TABER. Has anything been done about the Battle Creek job?

Colonel STARBIRD. Nothing except planning, sir. The planning has been started.

Mr. TABER. Does it involve construction of a reservoir, or simply dikes?

Colonel STARBIRD. It is simply dikes and the channel improvement, sir, to get a cutoff channel. There is no reservoir involved. This is a very flat valley in which it is impractical to get reservoir storage.

WRIGHTSVILLE RESERVOIR

Mr. TABER. Tell me about the Wrightsville Reservoir.

Colonel STARBIRD. Wrightsville Reservoir, sir, is a reservoir already complete. It is located above Montpelier, the capital of Vermont, on north branch of the Winooski River, about 56 miles from the mouth of that river. It was constructed with ERA funds. Its construction was based on the premise that it would be safe to put in a spillway that could handle a flood 45 percent greater than the flood of record.

Our analyses with the Weather Bureau indicate now that a greater flood might occur. There was authorized, therefore, in 1944 a modification of the spillway to enlarge the capacity.

The project here concerned is that enlargement of spillway capacity. There has been appropriated to date $45,000 to carry on planning. The request this year is for $40,000 more to carry on planning.

If this reservoir went out the damage to Montpelier would be catastrophic.

Mr. TABER. Have they had serious damage from floods?

Colonel STARBIRD. They did, sir, largely prior to construction of the reservoir. The largest damage came from the flood of 1927, which was the record flood. I do not know the total damage on the Winooski River, but I would estimate it ran into the millions, sir. It was a very devastating flood.

This reservoir was completed with ERA funds after that flood. It has fairly well controlled the upper portions of the river since that time. There is a danger, however, that the reservoir would be overtopped unless the dam is raised slightly and the spillway capacity is increased.

Mr. TABER. Has there been anything of that kind in the past?

Colonel STARBIRD. A failure of the dam, sir?

Mr. TABER. Any trouble? There has not been any flood damage since this dam was put in, has there?

Colonel STARBIRD. No, sir. There were serious floods in 1936 and 1938. However, those were smaller than the 1927 flood and much smaller than the flood the Weather Bureau and ourselves estimate could occur in the valley.

Mr. TABER. When was this put in?

Colonel STARBIRD. It was completed in 1935, sir.

Mr. TABER. There has been no flood since then that has done any particular damage?

Colonel STARBIRD. Not in the Montpelier area, sir, below the dam, I should say none on the Winooski. That would be remedied by this dam. The dam has held, sir.

Mr. TABER. What is the ratio of benefits to cost?

Colonel STARBIRD. Sir, this has no ratio. As General Itschner mentioned yesterday, there are certain cases where loss of life or potential loss of life is the justification for the project. It is impossible to compute a benefit-to-cost ratio because if the dam stands then there will be no greater benefit than would occur right now through the existing dam being there. If the dam fails, as I mentioned, the damage would be terrific to Montpelier and all the way down the river to Lake Champlain.

REASONS FOR BELIEVING DAM IS NOT ADEQUATE

Mr. TABER. What makes you think that the dam will not hold?

Colonel STARBIRD. Sir, this is a dam that has a concrete spillway. It was designed originally to take care of a flood 45 percent, to be exact, above the flood of record. If a flood greater than that occurred the water would go over the dam and erode the dam and it would fail.

Mr. TABER. Do you have anything to show there is a prospect of its failing? Is there anything substantial or dependable that would make anybody figure that it would fail?

Colonel STARBIRD. There is no weakness in the dam right now, sir. It is a matter of judgment and probability whether or not a flood greater than the designed flood will occur.

Mr. TABER. What makes you think it might?

Colonel STARBIRD. To give you an example, sir, a flood occurred on the Kansas River which was, as I remember it, somewhere in the neighborhood of 75 percent higher than any that had occurred in the past. As a result of that we have had to change our design because of larger floods having occurred. The magnitude and frequency of

floods is developed, sir, by the Weather Bureau and ourselves jointly studying the matter and by taking the worst storm that occurred in the general area and transposing that storm over the worst position above the reservoir. The analysis we have made reveals that a storm much larger than that for which this project is designed to control could occur in this area.

Mr. TABER. Where is the Kansas River?

Colonel STARBIRD. The Kansas River is the tributary of the Missouri River.

Mr. TABER. That is a good way from this particular spot; 1,200 miles, anyway.

Colonel STARBIRD. I used it as an example, sir, merely to indicate that there are cases where floods have occurred in recent years which were greater than those of the past.

Our records of floods basically in the United States are relatively short. It can be expected with a longer period of history that many of the maximums of record will be exceeded.

You were mentioning one a little earlier, sir, on the levels of the Great Lakes. There the highest levels occurred in 1951–52, yet as Mr. Brennan brought out, it may be that the lakes are now en route to a higher level.

Mr. TABER. You mean they are going up now?

Colonel STARBIRD. They have turned and are going back up. We do not know whether it is just due to the spring runoff or whether or not it is due to a change in the cycle.

Mr. TABER. I believe that is all.

LAKE ERIE HARBOR TONNAGES

Mr. KIRWAN. What is the tonnage of the Cleveland and Buffalo Harbors?

Mr. TABER. Have we covered that yet?

Mr. KIRWAN. No; Mr. Taber. I am asking this because you talked about the tonnage at Ashtabula. I am trying to find out what is the biggest port or harbor on Lake Erie and which one handles the most tonnage on Lake Erie. It startled me when it was stated they had 15 million tons at Ashtabula in 1953.

Colonel STARBIRD. Colonel Allen will answer your question, sir.

Colonel ALLEN. I will give you some of the major ports on the Great Lakes, sir.

Mr. KIRWAN. On Lake Erie.

Colonel ALLEN. The port of Buffalo handled 22 million tons in 1953. The port of Cleveland handled 23 million tons. Toledo Harbor handled 31 million tons.

Mr. KIRWAN. Those 3 would be the 3 that probably top Ashtabula.

Mr. TABER. How much was Cleveland?

Colonel ALLEN. Cleveland, sir, was 23 million.

Mr. TABER. Buffalo was 22 million?

Colonel ALLEN. 22 million, sir.

Mr. TABER. And Toledo 31 million?

Colonel ALLEN. Toledo was 31 million, sir. Lorain Harbor handled 11 million tons.

Mr. TABER. How does Toledo get that much?

Mr. KIRWAN. The coal coming to the Northwest.

Colonel ALLEN. Lorain was 11 million tons, sir.

ASHTABULA HARBOR

Mr. KIRWAN. Ashtabula is probably about fourth.

Getting back to Ashtabula they are talking now in Ohio of trying to build a four-lane highway from the Ohio River to the city of Ashtabula, for the arrival of the St. Lawrence seaway project. That is how eager they are. The firm that has that route now is about 2,200 feet in Lake Erie. They are working on that and the concrete is going in now, with a contract of a couple of weeks ago. When they get it built they will have invested nearly $6 million of local interest.

Colonel ALLEN. That is at Ashtabula, sir?

Mr. KIRWAN. Yes. When it is completed it will be pretty near $6 million. You have only made a request here for $5 million, I think.

Colonel ALLEN. $5 million is the total estimate cost of the authorized project, sir.

Mr. KIRWAN. $5 million will complete the authorized project?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. I hope that this committee will put more money in this year for Ashtabula, for construction. There is $46,000, in here for planning, but they know now where they would start the work of construction, without going into the overall planning.

Colonel ALLEN. Some work could be initiated late in the fiscal year 1956 if money is made available for construction.

Mr. KIRWAN. To try to meet what the State of Ohio is going to do and to try to meet what the local interests are going to do?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. I think that is all, Mr. Chairman.

CONSTRUCTION

CALUMET-SAG MODIFICATION

Mr. MARSHALL. The first construction project we have is the Calumet-Sag Channel. We will place in the record pages 9, 10, and 11 of the justifications.

(The information is as follows:)

ILLINOIS WATERWAY, CALUMET-SAG MODIFICATION, ILLINOIS AND INDIANA (NEW START)

Location.—In northeastern Illinois. Part I of the Calumet-Sag modification of the Illinois Waterway extends from Sag Junction (approximately 12.0 miles above Lockport) via the Calumet-Sag Channel and the Little Calumet and Calumet Rivers to turning basin No. 5 near the entrance to Lake Calumet, a distance of 23.8 miles.

Authorization.—1946 River and Harbor Act.

Benefit-cost ratio.—2.25 to 1 (pt. I only).

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$80,238,000	
Estimated local cash contribution	0	
Estimated project cost	80,238,000	
Appropriations to June 30, 1954	1,294,600	
Appropriations for fiscal year 1955	40,000	
Appropriations to date	1,334,600	2
Appropriations requested for fiscal year 1956	4,000,000	7
Balance to complete after fiscal year 1956	74,903,400	

PHYSICAL DATA

Channels: (*a*) Sag-Junction to Blue Island lock, 9 feet deep by 225 feet wide; (*b*) Blue Island lock to turning basin No. 5, 9 feet deep by 300 feet wide.
Lock: 110 feet by 950 feet.
Lift: 5 feet.
Relocations: 12 railroad bridges.
Dam: 280 feet long with spillway section 53 feet long.

STATUS (JANUARY 1, 1955)

Not started.

COMPLETION SCHEDULE

Dredging in Calumet-Sag Channel: June 1961.
Relocation of railroad bridges: June 1961.
Construction of Calumet River lock: June 1958.
Demolition of Blue Island lock: June 1961.

JUSTIFICATION

The Illinois Waterway is an important link in the Nation's inland waterway system connecting the Great Lakes with the Mississippi River system. Improvements to the Calumet-Sag Channel and adjoining channels will provide channel dimensions and bridge clearances which will permit large, modern-sized tows to operate and serve the large industrial areas of the Calumet region, with its great concentration of heavy industry, together with the exchange of cargo at the Calumet Harbor with deep draft vessels of the Great Lakes. The region through which the Calumet-Sag route passes is steadily developing. Railway facilities are in the process of expansion and highways are constantly being improved and relocated. Numerous industries are planning the acquisition of sites for new plant facilities along the waterway. In order that the development of this exceedingly important industrial area may not be hampered, and that local authorities may have a sound and tangible basis upon which to plan, it is of major importance that actual construction be commenced at the earliest date practicable. Evidence of the need for the project is the rapid growth of tonnage carried on the Calumet-Sag Channel. Commerce has increased from 43,000 tons in 1935 to 3,575,688 tons in 1953 in spite of the present narrow 60-foot channel and the very restricted bridge clearances which limit tows to 1 or 2 barges and to 1-way traffic, and the lack of any present adequate inland navigable connection with the Calumet industrial area. The efficient capacity of the present Calumet-Sag Channel is estimated at 1 million tons annually. Despite the demand of this great industrial district for additional barge transportation, all evidence indicates that the 1953 commerce of 3,575,688 tons cannot be materially

exceeded with the present channel and bridge clearances. Studies of potential traffic indicate that within 5 years after completion of part I of the project, barge traffic will increase by 4 million tons annually. From recent studies the applicable transportation savings are estimated to average $2.04 per ton.

Fiscal year 1956:	
Dredging Calumet-Sag Channel	$1,830,000
Reconstruction Gulf Mobile & Ohio Railroad bridge	765,000
Reconstruction New York Central-Michigan Central bridge	765,000
Engineering and design	300,000
Supervision and administration	340,000
Total	4,000,000

With the requested funds, widening a useful portion of the Calumet-Sag Channel and relocation of two obstructive bridges can be initiated. Initiation of construction on these items in fiscal year 1956 will permit the development of an orderly and efficient schedule of construction progress for completion of part I of the Calumet-Sag modification.

Completed work, Salumet-Sag modification.—None.

Remaining work—Calumet-Sag modification (parts II and III).—Further work to complete parts II and III of the Calumet-Sag modification includes:

Channel from Lockport to controlling works, not less than present width by 9 feet deep.

Channel from the controlling works to the junction with the Calumet-Sag Channel, 9 feet deep by 225 feet wide.

Channel 9 feet deep by 225 feet wide along the general route of the Grand Calumet River from its junction with the Little Calumet River to and in the Indiana Harbor Canal to 141st Street, East Chicago, Ind.

Channel 9 feet deep by 160 feet wide in the Grand Calumet River from its junction with the Indiana Harbor to Clark Street in Gary, Ind., with a turning basin at Clark Street.

Construction of a lock and controlling works in the Grand Calumet Channel west of the Indiana Harbor Canal.

Reconstruction of railroad bridges across Grand Calumet River.

Replacement of emergency dam (controlling works) above Lockport, Ill.

The estimated cost of the remaining work summarized above is $46,086,000.

Mr. MARSHALL. We would appreciate a brief statement on this subject.

Colonel ALLEN. The Calumet-Sag modification of the Illinois Waterway is a new start. It will provide for a shallow-draft project 9 feet deep and 225 feet wide between the Illinois Waterway at Sag Junction and the Great Lakes via Calumet-Sag Channel, Little Calumet, and the Calumet Rivers. The present Cal-Sag improvement is a narrow, 60-foot-wide channel, over which passed in 1953 in excess of 3½ million tons of commerce in 1- and 2-barge tows. This commerce is primarily in the commodities of coal, grain, and petroleum.

At the present time these commodities move up the Illinois Waterway in large tows, 6- and 8-barge tows, and have to be broken up in the vicinity of Lockport in order to transit the Cal-Sag Canal to their destination.

A feature of this project is the large number of railroad and highway bridges which have to be modified in order to provide the necessary clearance.

The Federal cost of the project, as you will note from the justification sheet, is $80 million. In addition to this an estimated $5 million is being borne by the railroads as their share of the cost of modifying railroad bridges. Another $13 million is being borne by States or local governments in connection with modification or alteration of existing highway bridges and crossings over the proposed Cal-Sag

Canal. So there is a high degree of local contribution toward this project, not in cash, but in work.

The project document provided that the railroad bridge alterations would be done under the principles of the Truman-Hobbs Act, which provides for a cost-sharing formula between the bridge owners and the Federal Government. The project document also provides that all highway bridges will be relocated at the expense of the bridge owner, whether it be a county, State, or some municipal organization.

Mr. MARSHALL. This project is not scheduled to be completed until 1961. Will the work you have scheduled for 1956 bring any immediate return?

Colonel ALLEN. It will bring some immediate returns in that we will have a channel about 1 mile long to the proper dimensions, which will permit a further movement of the larger tows but incrementally it will have very little benefit. The entire project must be accomplished before there is material benefit to the commerce anticipated to use this waterway and to the commerce now using it.

Mr. MARSHALL. By how much do you estimate travel flowing through the channel will increase as a result of this total project if carried out as planned?

Colonel ALLEN. For part 1, which extends from Sag Junction at the junction of the Calumet-Sag Channel and the Chicago Sanitary and Ship Canal to Turning Basin No. 5 on the Calumet River, we estimate that the tonnage will be doubled in a matter of 5 years. It is that small amount of tonnage on which the justification for part 1 is based.

You will notice on your map that there is a further extension of this project to the east toward Indiana Harbor and Gary. It is not contemplated we will do any work on that extension at this time. We are proposing to complete only part 1 and then reassess part 2 before continuing with completion of the ultimate propect which has a current estimated Federal cost of $126 million, or an additional $46 million over the $80 million for part 1. We are only talking about part 1 in this justification sheet.

Mr. MARSHALL. What is the benefit-to-cost ratio?

Colonel ALLEN. The benefit-to-cost ratio is 2.25 to 1 for part 1.

Mr. MARSHALL. That is quite high.

Colonel ALLEN. Yes, sir.

Mr. MARSHALL. How much of that is calculated on the increased tonnage?

Colonel ALLEN. It is all calculated on the increased tonnage. At the time this project was authorized there was on the order of 1 million tons using the Calumet-Sag Waterway. As I pointed out, that has increased at the present time to 3½ million.

There are no benefits taken in this benefit-to-cost ratio for the commerce now moving over the waterway, although it is manifest that there will be benefits due that commerce because they can team up in 6- and 8-barge tows as opposed to the present 1- and 2-barge tows. All the benefits are taken on additional commerce over and above that now using the waterway.

ILLINOIS WATERWAY

Mr. KIRWAN. With regard to the Illinois Waterway, the barges go right down that to the Mississippi?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. What is the depth?

Colonel ALLEN. It is a 9-foot project.

Mr. KIRWAN. 9 feet for the Illinois?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. Just for barges?

Colonel ALLEN. Yes, sir; the same as on the Ohio River. It is our standard inland waterway depth.

Mr. KIRWAN. What is the depth of the Ohio?

Colonel ALLEN. The Ohio is a 9-foot project, too, sir.

Mr. KIRWAN. The same depth as the Illinois?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. Is there much traffic on the Illinois?

Colonel ALLEN. The Illinois Waterway in 1953 had on the order of 14 million tons.

Mr. KIRWAN. What was it on the Ohio?

Colonel ALLEN. The Ohio was on the order of 60 million to 70 million tons.

Mr. KIRWAN. Thank you. This would be another feeder, a Calumet-Sag feeder for the Illinois Waterway?

Colonel ALLEN. Yes, sir. This would be another feeder and permit interchange of commodities between the Great Lakes deep draft harbors and feeders to the Illinois and Mississippi River systems.

Mr. KIRWAN. When the first boat gets into Ashtabula Harbor the boat itself will say, if it could, "Where will we go from here?"

We have to have that barge canal connecting Lake Erie with the Ohio at Pittsburgh. When the first boat gets into that harbor Pittsburgh will come in for that barge canal, and they have to have it to stay in competition with the rest of the world, not just America. Whom are we going to sell our goods to if we cannot load them on a barge at Pittsburgh and deliver them to an ocean steamer going out of there?

That is all.

Mr. TABER. Where is this Blue Island lock supposed to be?

Colonel ALLEN. Blue Island lock, sir, is right at the end of the brown coloring.

Mr. TABER. Here where it says "Clark Street"?

Colonel ALLEN. No, sir; the Blue Island lock as now existing is right here [indicating].

Mr. TABER. With regard to the 23 miles that you are planning to run this canal is any of that done now?

Colonel ALLEN. Yes, sir; the channel from the Blue Island control lock to the east, shown in the heavy black, has already been completed to the project width and depth. That was completed under a prior modification.

CALUMET RIVER TRAFFIC

Mr. TABER. Does the Calumet River carry traffic or not?

Colonel ALLEN. Yes, sir; there is considerable traffic on the Calumet River. The Calumet River has a draft sufficient to accommodate lake vessels.

Mr. TABER. You mean the lake vessels come in there?

Colonel ALLEN. Yes, sir. They come into Calumet Harbor and then up the Calumet River.

Mr. TABER. To the point where that black comes?

Colonel ALLEN. Yes, sir. There are terminals and piers and wharves all along the Calumet River.

Mr. TABER. What is the 23 miles?

Colonel ALLEN. That is the length of the channel from the end of the black coloring at the southern end of Lake Calumet westward over to Sag Junction.

Mr. TABER. This money which you are asking here is supposed to do the job from the junction all the way to the Calumet River?

Colonel ALLEN. No, sir. The entire cost of that project from the junction to the Calumet River is $80 million. The funds we are requesting for 1956, $4 million, will permit the initiation of that work.

PREVIOUS PROJECT EXPENDITURES

Mr. TABER. There has been nothing done on this project for quite a while, has there?

Colonel ALLEN. That is correct. We had a modest amount of planning money last year, but there has been no recent construction.

Mr. TABER. This is a new project?

Colonel ALLEN. Yes, sir; it is a new start this year.

Mr. TABER. This goes through the heart of the industrial section of Chicago?

Colonel ALLEN. No, sir; it does not; it is south of the main industrial section. There is considerable industry building up along the Little Calumet, and in the Lake Calumet area.

There is a lot of room for expansion along the route of the Calumet-Sag channel.

Mr. TABER. The main industrial section, then, is 5 or 6 miles north of the site?

Colonel ALLEN. It is north; yes, sir.

Mr. TABER. How many miles are you planning for in this project?

Colonel ALLEN. The part shown in black from the Blue Island controlling lock west to the Calumet-Sag junction is 16 miles.

Mr. TABER. Yes, but you are not expecting to do that this year?

Colonel ALLEN. No, sir; we are expecting to do on the order of 1 mile this year.

Mr. TABER. That part in red on the map is supposed to be the part you are expecting to work on; is it not?

Colonel ALLEN. Yes, sir; that red is overoptimistic with respect to the funds which can be used.

Mr. TABER. There must be about 3 miles in that area, or pretty close to it.

Colonel ALLEN. It is exactly 3 miles, sir; that is the amount which would be let with the first continuing contract, and it is in error to show it to be completed with fiscal year 1956 funds.

Mr. TABER. You have 23 miles to go is that the story?

Colonel ALLEN. We have 16 miles to do, sir.

Mr. TABER. 16 miles?

Colonel ALLEN. Yes, sir.

Mr. TABER. At a cost of $4 million a mile?

Colonel ALLEN. All that cost, sir, is not in dredging. A considerable cost of this project is in the bridge reconstruction by the Federal Government and the railroads, and in some instances, the cost per mile

will run more than that, because of the railroad bridges crossing the canal.

The funds which we are asking for this year will be used on the relocation of two bridges, and in addition, we will spend about $1.8 million on dredging.

Mr. TABER. Mr. Chairman, that is all I have.

Mr. KIRWAN. I just wanted to ask 1 or 2 questions:

What is the distance from Chicago down this waterway?

Colonel ALLEN. Along the Chicago Sanitary and Ship Canal it would be about 20 to 25 miles to Sag Junction.

Mr. KIRWAN. South of Chicago?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. This cut goes south of Chicago for 25 miles?

Colonel ALLEN. It would not be 25 miles south of Chicago throughout. That would be the extreme limit.

Mr. KIRWAN. The limit would be 25 miles?

Colonel ALLEN. Yes, sir.

Mr. TABER. The Sag Waterway, on a beeline to Chicago, would not be 25 miles; would it?

Colonel ALLEN. No, sir; but it would be on the order of 25 miles from Chicago along the Chicago Ship Canal.

Mr. TABER. If you followed that course, it would be 25 miles to the junction?

Colonel ALLEN. Yes, sir.

Mr. TABER. However, from the Sag River where it has been built up, and where the dredging has been done, to Chicago, would not be more than 6 or 7 miles; is that right?

Colonel ALLEN. It would be well within that range, sir.

BRIDGE REPLACEMENT

Mr. KIRWAN. How many railroad bridges cross this project, and how many would the project eliminate?

Colonel ALLEN. I have that information here, sir. In part I of the project, from Sag Junction to the foot of Lake Calumet, there are 24 highway bridges and 6 of these are acceptable; that is, they require no change.

Five bridges are to be removed and 13 bridges are to be rebuilt. There are 12 railroad bridges to be altered along this stretch, but the railroads will bear the cost to the extent of $5 million. So, you can see a major portion of the cost is in bridge reconstruction.

COST ALLOCATION FOR BRIDGES

I think there is one thing which I should point out to the committee with respect to this project, which may in future years have an effect on the Federal cost.

As I pointed out previously, this project was authorized with the railroad bridge alterations being done, under the provisions of the Truman-Hobbs Act of 1940, which provided for a division of cost, based upon the life of the bridge and its original capital cost, between the Federal Government and the railroads, or the bridge owners.

In 1952, the Truman-Hobbs was amended to include within that provision highway bridges. This project, however, was modified with the highway bridge cost entirely borne by the bridge owners. However, a resolution has been adopted by the House Public Works Committee this year to reevaluate and reassess this project, with the view to reallocation of highway-bridge costs under the terms of the Truman-Hobbs Act, as it exists today. That could have the effect of reducing charges to the bridge owners—the highway-bridge owners—and adding the difference, whatever it may be, for each particular bridge, to the Federal share of the cost. That is not reflected in this estimate since we have not made the study.

We have just received the resolution, but I think it is a factor which the committee might wish to know.

Mr. KIRWAN. I am glad you enlightened the committee on that.

I know a little about this Sag project, because I was on the Rivers and Harbors Committee 15 years ago, and I recall the Calumet project coming up for discussion, and it was a pretty hot issue.

Colonel ALLEN. Yes, sir; it has had a long history of authorization and modification, as you know.

Mr. KIRWAN. I remember when it was brought before the committee a long time ago.

Mr. MARSHALL. Colonel, can you give us any estimate as to what this proposed reallocation would cost in regard to this particular project?

Colonel ALLEN. I cannot be very accurate, but I can give you some ranges within which it might come. In determining this cost allocation, we must go into the proposition of the life of the bridge in order to determine how much of the original capital investment the bridge owner has worked out, and how much interest he has in a replacement structure, and so on, but for part I, the cost to the——

Mr. TABER. Part I is what?

Colonel ALLEN. The project we are talking about, sir, the $80 million project.

The cost to the bridge owners other than the railroads for part I is $12 million. So, the Federal share of replacing these bridges would be something less than $12 million, if it runs as the railroad bridges are running.

If they are newer bridges, and have to be replaced, the bridge owner has a lesser interest in the replacement structure than if the bridges were ready to be replaced anyway. So, for part I, the cost of the project would go up by some percentage of $12 million.

INDIANA HARBOR

Mr. MARSHALL. The next project is Indiana Harbor. We will insert pages 15 and 16 of the justifications into the record at this point.

(The pages referred to follow:)

INDIANA HARBOR, IND. (RESUMPTION)

Location.—Lake County, Ind., on southwest shore of Lake Michigan, 18 miles southeast of Chicago Harbor.

Authorization.—1935 and 1937 River and Harbor Act.

Benefit-cost ratio.—1.12 to 1 (for item recommended for fiscal year 1956).

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$2,004,000	
Estimated local cash contributions	0	
Estimated project cost	2,004,000	
Appropriations to June 30, 1954	1,170,000	
Appropriations for fiscal year 1955	0	
Appropriations to date	1,170,000	58
Appropriations requested for fiscal year 1956	45,000	61
Balance to complete after fiscal year 1956	789,000	

PHYSICAL DATA

Channels: An entrance channel 800 feet wide by 28 feet at outer end and 26 feet deep at inner end, an anchorage and maneuver basin in the outer harbor to 26 feet and a channel between bulkhead fills in outer harbor to 25 feet deep. Widen main stem of canal to 260 feet wide by 22 feet deep.

Breakwaters: An extension of the easterly breakwater about 2,300 feet to the north, and construction and placing of a lighthouse crib.

Status (Jan. 1, 1955)

	Percent
Approach channel	100
Outer anchorage and inner harbor	100
Breakwaters	100
Dredging main stem of canal	75

COMPLETION SCHEDULE

Widening at Youngstown Sheet & Tube Co. dock: December 1955.
Main stem of canal: June 1960.

JUSTIFICATION

General.—The enlargement of the Indiana Harbor Canal and the Calumet River Branch will facilitate the expansion requirements of industries that are now actively engaged in defense production. Of the 24,500 feet of wharfage along the main channel and its branches, about 19,500 feet are now being used by oil and steel-manufacturing companies as bulk terminals. The Youngstown Sheet & Tube Co. is now engaged in a plant expansion program to enlarge their facilities, estimated to cost about $200 million, and will use this new terminal in a portion of this expanded program. The bulkhead for the new terminal has been constructed and the necessary easements for the land required has been furnished the Government in acccordance with the act approved August 26, 1937, whereby the Government is to widen and deepen the channel as bulkheads and rights-of-way are provided. Widening the channel adjacent to this major steel company engaged in defense production at an expenditure of $45,000 will permit that company to establish a terminal for the receipt of fuel oil. Annual commerce of 20,000 tons of fuel oil will yield savings sufficient to result in a benefit-cost ratio of 1.12 to 1 for this project feature. It would also be used for shipment of finished steel products to and from this plant.

Fiscal year 1956.—The sum of $45,000 is required for channel widening and deepening on the northerly bank of the Indiana Harbor Canal adjacent to property owned by the Youngstown Sheet & Tube Co. for a distance of 1,080 feet between miles 0.67 and 0.91; widening to be 50 feet from present channel line and deepening 22 feet below water datum.

Completed modifications.—Construction of breakwaters and dredging the outer and inner harbors was completed at a cost of $2,015,000.

Uncompleted modification.—Act of July 3, 1930, provided for dredging to widen the Lake George Branch of the harbor canal. The completed work has cost $443,800 with the remaining dredging to complete this modification estimated to cost $137,200.

Mr. MARSHALL. Will you please give us a statement regarding this project?

Colonel ALLEN. The Indiana Harbor project is one where $45,000 is requested in order to provide widening of a small portion of the canal for 1,080 feet, to be exact, to 210 feet from its existing 160 feet.

This project, when authorized, provided that the United States should widen this when local interests who own the waterfront property provided the lands and rights-of-way so as to permit the widening up to the project width of 260 feet.

In this case, the abutting owners had constructed a bulkhead on the new setback line, and we are asking for $45,000 to do this one portion. It is not intended that in subsequent years we would request additional funds unless local interests provided the rights-of-way to the Federal Government for the channel. We have to work on this Indiana Harbor, and the Chicago River, pretty much in this way, and as local interests provide the rights-of-way, construct the channel to its project width.

Mr. MARSHALL. Will the construction that you plan for 1956 benefit anyone other than the Youngstown Sheet & Tube Co.?

Colonel ALLEN. There are unevaluated benefits involved as a result of the ease by which ships which are destined to terminals above the Youngstown Sheet & Tube Co. will be able to negotiate and be able to pass this particular place.

As it is now, the channel is 160 feet wide, and the ships now obstruct the channel, thereby restricting the operations.

There are unevaluated benefits which will accrue to commerce originating or terminating above the Youngstown Sheet & Tube Co.

BENEFIT-COST RATIO

Mr. MARSHALL. Your benefit-to-cost ratio of 1.12 to 1 was calculated on the basis of 1953 prices. If it was brought up to current costs, what would be the ratio?

Colonel ALLEN. I do not have that figure, sir. The figure of 1.12 to 1 is the latest calculation which we have made on this project.

Mr. MARSHALL. Mr. Kirwan?

Mr. KIRWAN. Is this widening of the channel being done in order to get up to the other district beyond the Youngstown Sheet & Tube Co.?

Colonel ALLEN. Ships can now get up there.

Mr. KIRWAN. I mean in order to get up there much cheaper, and better, and safer, you will have to do some construction work there?

Colonel ALLEN. Yes, sir that is correct.

As you see, there is considerable portion of this Indiana Harbor canal yet to be widened—all of the portions shown in brown, on which we cannot proceed with until local interests provide rights-of-way on the side of the channel in order to do the work.

Mr. KIRWAN. That is all I have.

Mr. MARSHALL. Mr. Taber?

Mr. TABER. Where is the Youngstown Sheet & Tube Co. located? Is it shown on this map?

Colonel ALLEN. It is adjacent to the small red-colored area to the north of the canal.

Mr. TABER. You really have a canal there now of a 22-foot depth?

Colonel ALLEN. Yes, sir; of a 22-foot depth, and 160 feet wide.

Mr. TABER. All the way through?

Colonel ALLEN. Yes, sir, for all of the area shown in black up to the forks.

Mr. TABER. It goes beyond that also; does it not?

Colonel ALLEN. Yes, sir.

Mr. TABER. It goes both ways—over into East Chicago; does it not?

Colonel ALLEN. Yes, sir.

Mr. TABER. What do you plan to use the money for?

Colonel ALLEN. We are going to widen the area shown in red a distance of about 1,080 feet on the north side in order to provide an additional 50 feet in the channel at that point.

Mr. TABER. Do you need more than 150 feet?

Colonel ALLEN. The project dimension is 260 feet, and that is proposed to be provided by taking 50 feet on either side of the existing channel, with local interests providing those lands, and rights-of-way.

Mr. TABER. That is all, Mr. Chairman.

ST. MARYS RIVER—BRIDGE ISLAND

Mr. MARSHALL. The next project is Bridge Island on the upper St. Marys River, and we will insert pages 20 and 21 of the justifications into the record at this point.

(The pages referred to follow:)

ST. MARYS RIVER, MICH.—BRIDGE ISLAND (NEW START)

Location.—Bridge Island, located in the South Canal, upper St. Marys River, Mich., in the upper approach to the MacArthur and Poe locks. The present swing bridge is pivoted on Bridge Island.

Authorization.—1945 River and Harbor Act.

Benefit-cost ratio.—Not evaluated. The benefits are based on considerations of safety for navigation.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$3,312,000	
Estimated local cash contribution	419,000	
Estimated project cost	3,731,000	
Appropriations to June 30, 1954	41,000	
Appropriations for fiscal year 1955	0	
Appropriations to date	41,000	1
Appropriation requested for fiscal year 1956	338,000	10
Balance to complete after fiscal year 1956	2,933,000	

PHYSICAL DATA

Relocations: Construct new lift bridge over South Canal and remove Bridge Island.

STATUS (JANUARY 1, 1955)

Plans and specifications for new lift bridge complete. No construction started.

Channels: Remove Bridge Island 1,000 feet long to 27-foot depth.

COMPLETION SCHEDULE

June 30, 1958.

JUSTIFICATION

The channels and locks in the St. Marys River are a part of the connecting channels of the Great Lakes which permit deep-draft commerce between the upper and lower lakes. The annual commerce for the St. Marys River has averaged about 113 million tons in the past 10 years and consisted largely of iron ore, coal, stone, and grain. The free and continuous movement of these commodities is essential to the Nation's defense and economy. Of prime importance is the South Canal which is the upper approach to the MacArthur and Poe locks. This canal is crossed by a movable swing span which pivots on Bridge Island. This island divides the South Canal, which is 288 feet wide at this point, into two channels, 107 feet and 101 feet wide. Maneuvering is difficult due to cross currents at the intake of the adjacent Carbide Power Co. power canal and the small clearance at the island. Currents set up by filling of the MacArthur and Poe locks and northwesterly winds make passage more hazardous. The upper approach to the MacArthur and Poe locks could be blocked by a vessel sinking after striking Bridge Island, thus preventing the loaded downbound passage of the larger vessels as only the MacArthur lock has adequate depth over the sills to handle such vessels loaded to maximum permissible draft. The construction of a new lift bridge and subsequent removal of Bridge Island will provide increased safety for navigation.

Fiscal year 1956.—Construct the foundations for the new lift bridge over the South Canal, St. Marys River, Mich.; $338,000 will be required in fiscal year 1956 to accomplish this work.

Completed modifications, St. Marys River, Mich.—Works completed consist of the following: construction of four locks for deep-draft navigation, a new powerplant, piers, warehousing facilities, and the improvement of navigation channels and anchorage areas in the St. Marys River from the head of the river to Lake Huron. The completed work was constructed at a total cost of $49,406,000.

Remaining authorized modifications, St. Marys River, Mich.—The River and Harbor Act of March 7, 1942, authorized the construction of the MacArthur lock at a cost of $13,109,000. Work remaining under this authorization consists of constructing a guard gate at an estimated cost of $390,000. The River and Harbor Act of July 24, 1946, provides for the reconstruction of the Poe lock and dredging anchorage areas in the St. Marys River at an estimated cost of $34,173,000. No work has been done on the work authorized in 1946.

Mr. MARSHALL. We would appreciate a statement on this project, and I would appreciate it if you would go into some detail on this, because we understand there is some controversy in negotiating with bridge owners. I believe it would be well for you to give us some of the history of this controversy, and what the current status of negotiations is. Your planning report indicates that this had not been settled as of a few weeks ago.

Colonel ALLEN. As you noted, the planning report pointed out that we did not have agreements with the bridge owners on the cost allocation for this project.

The project at this St. Marys Bridge is at the Sault locks, and it involves the replacement of an existing bridge which is above the approaches to MacArthur and Poe locks, and the removal of the island on which the present swing bridge is sited. The horizontal clearance of the existing bridge is 107 feet on one side and 101 feet on the other, and presents a hazardous situation in maneuvering into and out of the two locks.

I have two photographs, Mr. Chairman, which I think show the situation.

This is Bridge Island, which we propose to remove, on which is located the bridge, and this is the bridge in the open position.

You can see this ship here, and the difficulty it is having in maneuvering in order to get out of the locks. The reason the ships have to use this lock is that it is the deepest lock and the downbound ships use this lock in order to take advantage of the effective depth.

Mr. TABER. Why do you have to have a greater depth for the downbound traffic?

Colonel ALLEN. The downbound traffic takes on its cargo at Duluth-Superior and Two Harbors, Mr. Taber, which are the iron ore ports of origin. The upbound traffic is traveling light or in ballast, or carrying less dense cargo than the iron ore which they carry downbound.

Mr. TABER. What is the annual tonnage which goes through here?

Colonel ALLEN. The annual tonnage through the Sault locks for the last 10 years has averaged 113 million tons. In 1953 it was 128 million tons.

Mr. TOFANI. Last year it was 133 million tons.

CONTROVERSY REGARDING COST ALLOCATION

Colonel ALLEN. There is a situation existing here with the bridge owners which I should like to go into in some detail, and acquaint the committee with the facts.

The authorization for this improvement in the 1945 River and Harbor Act limited the United States share to 84 percent of the cost of replacing the bridges. This figure of 84 percent was arrived at, using the principles of the Truman-Hobbs Act, which I touched on before in connection with a previous project, and that act set up a method of cost apportionment between the Federal Government and the owners when obstructive bridges were to be replacd, and the principles of the Truman-Hobbs Act were applied. The cost of the bridge replacement at that time was $607,000. Of this, the bridge owners' share was $107,300. This figure was then converted into a percentage, and the bridge owners' share, established in the project document, was 16 percent, or the Federal Government's share was 84 percent.

Since authorization, two things have happened which affect the cost apportionment on this bridge.

First, the bridge owner has had 10 additional years of use from this bridge, and has a greater interest in a replacement structure by reason of the fact that he has worked out a greater portion of his capital investment; and, secondly, the cost of a replacement structure has increased from the original figure estimated about 10 years ago.

If the principles of the Truman-Hobbs Act were being applied today to this structure, using the same principles which were applied when the project was authorized, the bridge owners' share would be $262,000. That compares with the $107,000 which I mentioned previously. However, if the 16 percent figure which is used in the project document were applied, the bridge owners' share is $419,000. That, briefly, explains the reluctance of the bridge owners to enter into any agreement or cost apportionment at this time.

The corps feels that it has no other alternative, if we want to get this work done—and we feel it is worthwhile and desirable—but to act under the terms of the authorization. That authorization provides that the owners of the bridge shall provide a lift span over the South Canal, upon request made by the Secretary of the Army, in accordance with the plans and specifications approved by the Chief of Engineers.

We are requesting this small amount in 1956 in order to show intent on the part of the United States to proceed with the alteration in accordance with the authorization, or with any amendment which may be authorized.

So, in brief, we have the first cost apportionment made strictly on the principles of the Truman-Hobbs Act, which gives the bridge owners a cost of $107,000. That was converted to a percentage, which was included in the language of the project document, and by which we are bound.

If that strict percentage were applied today, the bridge owner would pay some $400,000. However, since that time he has had 10 more years of use out of the bridge, and the cost of the replacement structure has increased. If we were recomputing it today on the basis of the same principles used in the project document, the bridge owners' share would be on the order of $262,000. So, those are the extremes within which we must work.

Mr. MARSHALL. Colonel, what happens if this appropriation is made, and you still have not reached an agreement with these bridge owners?

Colonel ALLEN. If these moneys are appropriated, we feel that we could go to the bridge owners, point out that the Federal Government is acting in good faith, and issue the proper order as provided under the authorization or any amendment which may be authorized. If he then refuses, we will have no other recourse, but to refer the matter to the Attorney General, and seek to obtain his compliance with the provisions of the project document. This amount is requested in order to show our intent to proceed, and of course if no agreement can be reached, and if the thing is held up in the courts, or for any other reason, the funds will not be obligated.

Mr. MARSHALL. A moment ago I asked you about the annual tonnage which went through these locks. What portion of it goes through this channel where Bridge Island is located?

Colonel ALLEN. A high percentage of it, sir, because it is in this channel that the greatest depths are available for the down-bound ships. We have the MacArthur lock, which is our lock of the greatest depth, 31 feet, which is used in this channel. So, a good portion of the down bound tonnage would be going through this area.

Mr. MARSHALL. When you say a "high percentage," do you mean over 50 percent?

Colonel ALLEN. I would say more than 50 percent of the down-bound tonnage would transit the MacArthur and Poe locks.

DULUTH-SUPERIOR HARBOR

Mr. MARSHALL. The next project is the Duluth-Superior Harbor project. We will insert pages 25 and 26 of the justifications into the record at this point.

(The pages referred to follow:)

DULUTH-SUPERIOR HARBOR, MINN. AND WIS. (DEEPEN SUPERIOR FRONT CHANNEL) (Continuing)

Location.—Duluth-Superior Harbor is located at the extreme western end of Lake Superior. The cities of Duluth, Minn., and Superior, Wis., are situated on the north and south sides, respectively.

Authorization.—Public Law 568, 82d Congress 2d session.

Benefit to cost ratio.—3.0 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$515,000	
Estimated local cash contributions	0	
Estimated project cost	515,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	300,000	
Appropriations to date	300,000	58
Appropriations requested for fiscal year 1956	215,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Channels: Superior Front Channel, 25 feet deep, 600 feet wide, 2.5 miles long, extending in a northwesterly direction through Superior Bay from the 25-foot-deep Superior Harbor Basin to the 25-foot-deep East Gate Basin Channel.

STATUS JANUARY 1, 1955

Deepening Superior Front channel from 22 to 25 feet: 9 percent completed.

COMPLETION SCHEDULE

October 1955.

JUSTIFICATION

With an annual average commerce of about 65 million tons for the past 10 years, the harbor is second in waterborne commerce to New York. About 75 percent of the total commerce at the Duluth-Superior Harbor consists of the shipment of iron ore. Other principal commodities include coal and coke, grain, crude oil, and limestone products. The Superior Front Channel is the connecting link between the Duluth and Superior portions of the harbor. A depth of 25 feet in this channel to correspond with that depth in the channels and basins in the two portions of the harbor and in the connecting channels of the Great Lakes will permit ore boats loaded to capacity to pass from one portion of the harbor to the other. In this manner, capacity-laden ore boats can use either of the harbor entries in the event of blockage of the other entrance by ice, a sunken vessel, or other eventuality.

Fiscal year 1956.—Complete deepening of Superior Front Channel to 25 feet, which work was initiated in fiscal year 1955.

COMPLETED MODIFICATIONS

All work included in the existing project for Duluth-Superior Harbor has been completed except deepening of Superior Front Channel. The completed work consists of 17 miles of dredged channels; 4 large basins; 2 deep-draft entries through Minnesota Point to Superior Bay; and piers, breakwaters, and revetments at or adjacent to the deep-draft entries. The cost of this completed work is $6,857,000.

Mr. MARSHALL. We will be glad to hear from you on this project.

Colonel ALLEN. The Duluth-Superior project is a project initiated last year, and for which completion funds are required in the amount of $215,000. This provides for the completion of the Superior Front Channel to a depth of 25 feet.

Since last year, we have had a reduction in the cost estimate from $625,000 to $515,000, by reason of very favorable dredging bids. The benefit-to-cost ratio is 3 to 1.

Mr. MARSHALL. You feel that the $215,000 is adequate to complete this project?

Colonel ALLEN. Yes, sir; it is.

Mr. MARSHALL. Do you anticipate any savings?

Colonel ALLEN. We do not anticipate any. We may have a little left over, but at the present time we anticipate that the greater portion will be used.

Mr. MARSHALL. If there are no further questions, we shall go to the next project.

BUFFALO HARBOR

The next project is Buffalo Harbor, and we will insert pages 30, 31, and 32 of the justifications into the record at this point.

(The pages referred to follow:)

BUFFALO HARBOR, N. Y. (NORTH ENTRANCE, BUFFALO RIVER AND BUFFALO SHIP CANAL)

Location.—The harbor is located at the east end of Lake Erie. The modification to the project, to which the following justification data pertain, provides for deepening of the north entrance channel to the harbor, the Buffalo River entrance channel, Buffalo River, and the Buffalo Ship Canal.

Authorization.—1945 River and Harbor Act.

Benefit-cost ratio.—1.45 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$13,000,000	
Estimated local cash contribution	0	
Estimated project cost	13,000,000	
Appropriations to June 30, 1954	2,000,000	
Appropriations for fiscal year 1955	1,100,000	
Appropriations to date	3,100,000	24
Appropriations requested for fiscal year 1956	1,200,000	33
Balance to complete after fiscal year 1956	8,700,000	

PHYSICAL DATA

Channels.—North entrance—25 feet deep in soft material, 26 feet deep in hard material, 800 feet wide from deep water into north outer harbor.

Buffalo River entrance channel—22 feet in soft material, 23 feet in hard material, 0.8 mile long, varying widths.

Buffalo River—22 feet in soft material, 23 feet in hard material, 5.1 miles long, varying widths.

Buffalo Ship Canal—22 feet in soft material, 23 feet in hard material, 1.2 miles long, varying widths.

	Status, Jan. 1, 1955	Completion schedule
North entrance	Not started	Fiscal year 1963.
Buffalo River entrance	15 percent completed	September 1956.
Buffalo River	74 percent completed	June 1956.
Buffalo ship canal	Not started	November 1956.
Entire project	16 percent completed	Fiscal year 1963.

JUSTIFICATION

Buffalo Harbor has been progressively improved since 1826 to meet the needs of expanding waterborne commerce. The total waterborne commerce in 1953 was 18,342,838 net tons, consisting principally of 6,855,556 tons of iron ore, 4,115,391 tons of stone, and 3,264,409 tons of grain including flaxseed. In addition, there were 3,952,411 net tons of through traffic.

The greater portion of traffic to Buffalo terminals is made up of bulk commodities; principal of which are iron ore, limestone, grain, and coal. Located at various points on the Buffalo River entrance channel, Buffalo River, and Buffalo Ship Canal is a plant of the Republic Steel Co. which receives iron ore and limestone, 4 other docks at which limestone is received, 3 coal docks, and 13 grain elevators. Completion of the work authorized in these channels as part of the 1945 modification will permit operators of most of the bulk cargo carriers bound for terminals on the inner harbor channels to load their vessels to 2 feet additional draft. At present very few of the vessels employed in this traffic can be loaded to maximum drafts due to the shallow controlling depths. Accomplishment of the work will return substantial benefits through reduced transportation costs.

Fiscal year 1956.—The requested amount of $1.2 million will be applied to:

Continue deepening of the Buffalo River entrance channel	$780,800
Complete deepening of Buffalo River	311,700
Engineering and design	9,500
Supervision and administration	98,000
Total	1,200,000

Work scheduled for fiscal year 1955 will provide a channel deepened to project depth in Buffalo River upstream to a point 650 feet above the twin bridges of the New York, Chicago & St. Louis and the Buffalo Creek Railroads (bridges Nos. 4 and 5), and will provide a restricted channel through the north half of the Buffalo River entrance channel. The amount requested for fiscal year 1956 is required to continue improvement of these channels under a continuing contract. Deepening the remainder of Buffalo River to project depth will be completed and deepening the Buffalo River entrance channel will be continued to provide a safer and more adequate passage into the river.

Completed modifications, Buffalo Harbor, N. Y.—Work accomplished under completed modifications consists of: An outer harbor, about 4½ miles long and enclosed by a breakwater system with an aggregate length of 23,704 feet; a south pier at the entrance to the inner harbor, 1,760 feet long; and deepening the outer harbor to 21 feet, Buffalo River and the Buffalo River entrance channel to 21 feet, and the north entrance to 23 feet. The cost of this completed work is $995,000.

Remaining authorized modifications, Buffalo Harbor, N. Y.—A further modification to the project, authorized by the 1935 River and Harbor Act, provided for the extension of the south entrance breakwater and the south breakwater, deepening the north outer harbor to 23 feet, deepening the south outer harbor and the south entrance to 25 feet, and removal of 3 small shoals in the approach to the south entrance to a depth of 27 feet, at an estimated cost of $3,870,000. All items of this modification, except for deepening a portion of the south outer harbor to 25 feet and a narrow strip along the landward limit of the north outer harbor to 23 feet, have been completed at a cost of $2,357,800. The estimated cost to complete the remaining work is $1,512,200, of which $8,000 is available for expenditure in fiscal year 1955.

Mr. MARSHALL. We will be glad to have a brief statement on this project.

Colonel ALLEN. This project was resumed last year, with an appropriation of $1.1 million. The 1956 request is for $1.2 million to permit continuation of the work in the Buffalo River channel, which is designed to improve the depths in the Buffalo River Channel from their existing depths of 20 feet to 22 feet, in soft material, and 23 feet in rock.

Mr. MARSHALL. If there are no questions, we shall proceed to the next item.

CLEVELAND HARBOR

The next project is the Cleveland Harbor, and we will insert pages 36, 37, and 38 in the record at this point.

(The pages referred to follow:)

CLEVELAND HARBOR, OHIO (BRIDGE REPLACEMENTS AND CHANNEL IMPROVEMENTS)

Location.—The harbor is located on the south shore of Lake Erie, 176 miles westerly from Buffalo, N. Y. The modification of the project, to which the following data pertains, provides for improvement of channels in Cuyahoga and Old Rivers, and for replacement of six obstructive railroad bridges across the Cuyahoga River and reconstruction of a pier for a seventh.

Authorization.—1946 River and Harbor Act.

Benefit-cost ratio.—2.14:1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$20,300,000	
Estimated local cash contributions	0	
Estimated project cost	20,300,000	
Appropriations to June 30, 1954	10,125,000	
Appropriations for fiscal year 1955	1,000,000	
Appropriations to date	11,125,000	55
Appropriations requested for fiscal year 1956	5,300,000	81
Balance to complete after fiscal year 1956	3,875,000	

PHYSICAL DATA

Channels: Cuyahoga River, 23 feet deep, suitably widened at bends, and obstructive bridges 5.8 miles long. Old River, 23 feet deep, various widths, 0.8 mile long.

Obstructive railroad bridges: Replacement of railroad bridges Nos. 25, 8, 9, 1, 15, and 3. Alteration of pier of railroad bridge No. 19.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Improvement of Cuyahoga River	10	Improvement of Cuyahoga River, June 1958.
Improvement of Old River	Completed	
Replacement of bridges 25 and 8	do	
Replacement of bridge 9	50	Replacement of bridge 9, November 1955.
Replacement of bridge 1	22	Replacement of bridge 1, September 1956.
Replacement of bridge 15	16	Replacement of bridge 15, January 1957.
Replacement of bridge 3	21	Replacement of bridge 3, February 1957.
Pier Replacement of bridge 19	Not started	Pier Replacement of bridge 19, June 1958.
Entire project	53	Entire project, June 1958.

JUSTIFICATION

Cleveland Harbor has been progressively improved since 1825 to meet the needs of the expanding economy of this highly important industrial center on the Great Lakes. The total waterborne commerce at the harbor in 1953 was 23,483,095 net tons.

The greater portion of the commerce at the harbor is comprised of receipts of iron ore and limestone from upper lake ports. Cleveland is the most important ore receiving port on the Great Lakes; 16,270,919 tons were received in 1953. About 2 million tons of iron ore a year are received at the Erie ore dock in Old River for transshipment inland. Approximately 7 million tons of ore and the greater portion of limestone receipts are received at facilities near the head of navigation on Cuyahoga River for direct consumption at the steel plants operated by the Republic Steel Corp., Jones & Laughlin, and American Steel & Wire division of United States Steel.

On the Great Lakes, bulk commodities such as iron ore and limestone are carried in large deep-draft vessels. Due to the obstructive nature of the bridges

and bends, vessels greater than 550 feet in length cannot navigate to the steel plants on the Cuyahoga River. The improvements underway will permit the use of vessels up to 600 feet in length in this trade. The project is fully justified by the great reduction it will effect in transportation costs through the use of large lake vessels for receipt of bulk commodities.

Fiscal year 1956.—The requested amount of $5,300,000 will be applied to:

Complete replacement of Bridge No. 9	$701,600
Continue replacement of Bridge No. 1	1,388,800
Continue replacement of Bridge No. 15	1,851,100
Continue replacement of Bridge No. 3	1,133,000
Continue improvement of Cuyahoga River Channel by widening at Bridge No. 9 and Cut No. 10	41,100
Supervision and administration	183,600
Engineering and design	800
Total	5,300,000

The amount of $5,300,000 is required to provide for partial reimbursements to the bridge owners for the Federal share of the replacement work scheduled to be completed by the owners through fiscal year 1956 under continuing contracts and for dredging in the Cuyahoga River at Bridge No. 9 and Cut No. 10.

Completed modifications, Cleveland Harbor, Ohio.—Work accomplished under completed modifications consists of: An outer harbor, 5 miles long and enclosed by a breakwater system with an aggregate length of 30,218 feet; 2 piers at the mouth of Cuyahoga River, the east pier 1,602 feet long and the west pier 1,440 feet long; deepening to 23 feet through the east outer harbor easterly from a line drawn perpendicular to the east main breakwater, beginning 800 feet east of the west end, and deepening to 25 feet west of that line and in the entrance channel from the lake to the mouth of the river and in the west outer harbor basin; deepening the lower 5.5 miles of Cuyahoga River and the lower 1.1 miles of Old River to 21 feet; and deepening a turning basin in Cuyahoga River to a depth of 18 feet in vicinity of mile 4.8. The cost of this completed work was $6,206,000.

Remaining authorized modifications, Cleveland Harbor, Ohio.—A further modification to the project, authorized by the 1945 River and Harbor Act, provides for the extension of the improved channel in Cuyahoga River, from about mile 5.5 to mile 5.8 and deepening thereof to 21 feet. The right half of the extension has been deepened and the remaining half is scheduled for accomplishment in fiscal year 1958. The estimated cost of this modification is $203,000 of which $86,000 is for the uncompleted portion.

Mr. MARSHALL. We will be glad to have a statement from you on this project.

Colonel ALLEN. The Cleveland Harbor project is a continuing project which provides for alteration of obstructive bridges across the Cuyahoga River, in order to permit lake carriers to transit the river with more facility and safety.

I have a few photographs here, which I believe will show the conditions under which the lake vessels now operate in transiting some of the obstructive bridges. This year, 1956, is the peak year of appropriations for the Cuyahoga River project, $5.3 million.

There are four bridges now under construction, all of which are in the superstructure stage, and requiring large expenditures for steel and steel erection.

In addition to an estimated $20 million of Federal participation in this project, the railroads are contributing about $4 million as their share of the cost of relocating their bridges, and the city has already replaced three highway bridges, at a cost of approximately $2.5 million. There are additional costs to the city, on the order of $2.6 million for bulkheads and real estate in connection with channel widening.

LOCAL CONTRIBUTION

Mr. MARSHALL. I notice from your planning report that the cost to local interests involves a considerable sum of money.

Do you have firm assurances that all requirements for local cooperation will be fulfilled, in keeping with your schedule?

Colonel ALLEN. Yes, sir; the situation in Cleveland is quite encouraging. All necessary assurances have been given.

The assurances of local cooperation have been given by responsible agencies in the city, and they have already, as I said, removed three highway bridges, and are taking steps to provide the necessary lands for the channel widening, as the requirement demands.

Mr. KIRWAN. What contribution does Republic Steel and Jones & Laughlin make to it?

Colonel ALLEN. There are no contributions from any of the users of the waterway.

Mr. KIRWAN. Who is it that bears the costs of local contributions to the project?

Colonel ALLEN. The city of Cleveland.

Mr. KIRWAN. The city of Cleveland itself?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. The channel today of the Cuyahoga River can receive a boat 500 feet or 550 feet in length?

Colonel ALLEN. It could, with difficulty; yes, sir.

Mr. KIRWAN. You have to get them up in there today. What is the length of an ore boat? Is the length of an ore boat 500 feet?

Colonel ALLEN. They run from 500 to 600 feet.

Mr. KIRWAN. Those boats go up to Jones & Laughlin, and up to Republic Steel?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. Are you making it so as to accommodate 600-foot vessels, and are you taking the bends and everything out in order to get boats of 600 feet up there to those locations?

In other words, do you not think the local steel plants should pay something, because there are not any other interests up in there which require boats of 600 feet? The channel now takes a 500-foot boat, or a 550-foot boat, and the other interests up in there could do business with 300-foot boats. The only ones benefiting by reason of the bends being taken out of the river are the local steel plants. When a fellow takes a look at the steel stocks, you find that United States Steel is thinking of declaring a 2-for-1 split, and if they had a little patriotism, instead of tossing out dividends as they are now with the price of steel as high as it is, it would seem they could make some contribution.

I do not think it is fair to the rest of the taxpayers to take the bends out of that channel just for 2 or 3 industries, Jones & Laughlin, American Steel & Wire, and the Republic Steel Corp., who make no contribution.

Again, as I said, any other business on the Cuyahoga River can get by with 300-foot boats, which could go up there with ease. That is about correct; is it not? Any other industry up in there could handle their business in a 300-foot boat, but the ones who are getting the benefit out of taking the bends out of the river are those two steel plants?

Colonel ALLEN. Of the 23 million total tons of commerce, 18 million tons were in iron ore.

Mr. KIRWAN. That is what I mean; they are the ones who are getting the benefit of it, and the other 5 million tons of the 23 million tons could be carried in 300-foot boats. So, we are straightening out that river as a gift to the Republic Steel Corp., American Steel & Wire, and Jones & Laughlin.

We are making a gift to those three steel plants, but the other 5 million tons could be handled by the existing channel.

PRESQUE ISLE PENINSULA

Mr. MARSHALL. The next project is for shore protection at Presque Isle, Pa.

We will place in the record pages 42, 43, and 44 of the justifications at this point.

(The pages referred to follow:)

PRESQUE ISLE PENINSULA, ERIE, PA. (NEW)

Location.—Protection and improvement of lakeward perimeter of Presque Isle Peninsula, Erie, Pa.

Authorization.—1954 River and Harbor Act.

Benefit/cost ratio.—1.17 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$2,090,000	
Estimated local cost	4,180,000	
Estimated project cost	6,270,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	600,000	29
Balance to complete after fiscal year 1956	1,490,000	

PHYSICAL DATA

Seawalls: Reconstruction of approximately 1,700 linear feet of existing stone seawall in section I; construction of approximately 1,120 linear feet of cantilever steel sheet pile bulkhead in section II; removal of approximately 2,600 linear feet of existing bulkhead in section VI.

Groins: Construction of 9 new groins approximately 300 feet long; extension of 1 existing groin; removal of outer end of 1 existing groin.

Beach replenishment: Placement of 1,100,000 cubic yards in sections I, II, and III on neck of peninsula; placement of 400,000 cubic yards in sections IV, V, and VI and stockpiling of 1 million cubic yards at waterworks reservation.

Status (Jan. 1, 1955)	*Completion schedule*
Seawalls: Reconstruction of 1,700 linear feet of existing stone seawall in section I and extension by similiar construction in lieu of recommended 1,120 feet of cantilever steel sheet pile bulkhead in section II completed by Commonwealth of Pennsylvania in 1952	Completed
Groins: Not started	Nov. 1956
Beach replenishment: Not started	June 1958

JUSTIFICATION

Presque Isle Peninsula is the only frontage on Lake Erie owned by the Commonwealth of Pennsylvania which is available for development of a public park. It has been in continuous and intensive use for this purpose by the

Commonwealth since 1922 during which time extensive improvements, including highways, buildings and shore protection structures, have been made. In spite of large expenditures for protection and maintenance along the lakeward perimeter of the peninsula, severe loss of beaches and damage to buildings and the highway continue to occur with frequent interruption of access to and use of the park facilities by the public.

It is imperative that a comprehensive plan of improvement be completed as soon as practicable in order to prevent further damage to and loss of existing protective structures and the remaining beach areas which would require replacement and materially increase the costs of providing the recommended improvement. Washouts of portions of the highway at three separate locations throughout the length of the peninsula have occurred since 1951.

The Commonwealth of Pennsylvania has appropriated $2,500,000 toward its share of the proposed project in addition to having spent about $600,000 in 1952 for performing a portion of the recommended work as emergency protection. Commonwealth officials have repeatedly indicated their desire to undertake work on the cooperative project as soon as practicable.

Fiscal year 1956.—The requested amount of $600,000 will be used to reimburse the Commonwealth of Pennsylvania for the Federal share of the project costs estimated to be incurred through fiscal year 1956.

Mr. MARSHALL. We would like to have some additional comments on this project.

Colonel ALLEN. This project is a beach erosion project, Mr. Chairman, similar to those that the committee heard yesterday. It is a joint venture between the State of Pennsylvania and the United States, on the basis of one-third Federal share of the cost, and two-thirds local.

The project provides for the construction of protective structures, groins, and seawall with sandfill between the groins. It is estimated that by the end of fiscal year 1956 the local interest will have placed work for which the Federal share will be $600,000.

If local interests continue with the project after 1956, at the rate they now contemplate, appropriations for 2 more years will be required to complete the project.

The State of Pennsylvania has already appropriated $2.5 million as a portion of their contribution, which will ultimately be $4.2 million. These funds have been offered to the Buffalo district for initiation of plans and surveys, and they are now proceeding with the work at the request of the State of Pennsylvania.

Mr. MARSHALL. Since the cost estimates were made before the plans were completed, how accurate do you consider these estimates?

Colonel ALLEN. It is felt that these estimates for Presque Isle are conservative. When the estimates were made, it was planned that the material for the sandfill would have to come from Lake Erie, which of course would be more expensive than if it were taken from inside Erie Harbor. Preliminary investigations conducted by the district indicate that a suitable source of beach material is very likely to be found in Erie Harbor, which will have the overall effect of reducing the cost estimate.

Mr. MARSHALL. The benefit-cost ratio seems to be only 1.17 to 1.

Colonel ALLEN. That is correct, sir.

Mr. MARSHALL. That is quite a low benefit-to-cost ratio, and most of the benefits claimed seem to be recreational.

About what percentage of this is recreational?

Colonel ALLEN. You will find in all of the beach erosion projects, Mr. Chairman, that recreational benefits are taken. They have been accepted by the Bureau of the Budget and by the Congress in authorizing the projects.

The purpose of the beach erosion law was, among other things, to encourage the healthful recreation of the people, and a modest amount per person has been accepted in these projects, as a proper benefit to the project.

It is felt that these benefits can be taken and are valid in view of the fact that such a high percentage of the cost is borne by local interests. The law limits, as you know, Federal participation to one-third of the cost of protecting publicly owned shores. The Federal Government does not contribute to the protection of privately owned shores, and only one-third of the cost of protecting publicly owned shores is permitted.

Mr. MARSHALL. On that, is there any large group of people whose economic welfare is dependent upon the recreational facilities here, as is the case with people at Ocean City or Virginia Beach?

Colonel ALLEN. No, sir; it is not that type of development. I assume you are speaking of heavy investments in hotels and recreational facilities. This is not that type of development. It is a resort area which is attractive to the people of the surrounding territory, but it does not have the tremendous investments such as Atlantic City, or Ocean City.

Mr. KIRWAN. The population around that area would probably run up to 300,000; would it not?

Colonel ALLEN. Erie itself is 130,000, without considering tributary areas.

Mr. KIRWAN. When you consider the areas adjacent to Erie, it would run up to 300,000, and when you consider the entire area, the Federal Government does not have too much of an investment involved when it has only $2 million in the project, and when the project is going to cost $6 million. I think it is a fair proposition.

When the State and local interests are paying $4,180,000 and the Federal Government is paying only $2 million, we should put the $2 million in, because knowing the site where it is located, without building this wall, it is going to be destroyed.

Colonel ALLEN. They had severe destructon there during the storm of about a month ago.

Mr. KIRWAN. I think it is a good project, Mr. Chairman, and I think the Federal Government is coming out all right.

WELLSVILLE LOCAL FLOOD CONTROL PROJECT

Mr. MARSHALL. The next project that we have for consideration is the Wellsville local flood-protection project. We will insert pages 48 and 49 of the justifications into the record at this point.

(The pages referred to follow:)

WELLSVILLE, GENESEE RIVER, N. Y. (NEW START)

Location.—Local protection for the village of Wellsville, located in Allegany County, and situated at the junction of Dyke Creek and Genesee River, 136.3 river miles above the mouth of Genesee River, which empties into Lake Ontario.

Authorization.—1950 Flood Control Act.

Benefit to cost ratio.—1.21 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$960,000	
Estimated local cash contribution	50,000	
Estimated project cost	1,010,000	
Appropriations to June 30, 1954	38,000	
Appropriations for fiscal year 1955	26,000	
Appropriations to date	64,000	7
Appropriations requested for fiscal year 1956	350,000	43
Balance to complete after fiscal year 1956	546,000	

PHYSICAL DATA

Channels: Improvement of lower 4,500 feet of Dyke Creek and improvement of Genesee River 6,000 feet downstream and 3,000 feet upstream from the mouth of Dyke Creek.

Relocations, roads: Underpinning of South Main Street highway bridge.

Relocations, railroads: Alterations to Baltimore & Ohio Railroad bridge.

Status (Jan. 1, 1955)

	Completion schedule
Underpinning South Main Street highway bridge, construction not started.	November 1955.
Alterations to Baltimore & Ohio Railroad bridge, construction not started.	Do.
Channel improvements in Genesee River and Dyke Creek, construction not started.	November 1956.
Entire project, construction not started.	Do.

JUSTIFICATION

The project will reduce flood stages in the village of Wellsville and will eliminate about 85 percent of the average annual flood damages. The flood area at Wellsville contains the municipal water and light plant, plants of the Sinclair Refining Co., Air Preheater Co., Julius Kayser Co., and Bausch & Lomb Co., public schools, part of the business district, parks, and some residences.

Floods at the water and light plant interrupt water and power service to the entire village, including a plant of the Worthington Pump & Machinery Co. Simultaneous flooding in other areas may damage the line which is the only alternate source of power. The project is necessary to prevent flooding, which disrupts the production of the local industries either directly or by interrupting power transmission, and will eliminate a potential health and fire hazard to the residents of Wellsville from the interrupted water and power service.

Based on the studies made prior to publication of the authorizing document, the average annual amount of flood damages that would be prevented by the project is estimated as $60,400. In recent years floods of Wellsville have increased in frequency, thereby increasing the desirability of providing protection for the village.

Fiscal year 1956.—The requested amount of Federal funds of $350,000 and the required cash contribution by local interests of $50,000 will be applied to:

Relocations, consisting of completion of underpinning of South Main St. highway bridge and completion of alterations to Baltimore & Ohio R. R. bridge	$38,000
Initiation of channel improvements in Genesee River and Dyke Creek	314,300
Supervision and administration	47,700
Total	400,000

The cash contribution of $50,000 required of local interests will be applied proportionately to all project features scheduled for fiscal year 1956.

Mr. MARSHALL. Give us a statement on this project.

Colonel STARBIRD. This is a local protection project to protect the city of Wellsville. That city has a population of around 6,500 persons. The city has suffered quite severely in damage. There has been a gradually increasing amount of damage. The highest flood of record occurred in 1950. The damages that year in the major flood were $320,000. There was a second flood that year causing damages of $83,000.

The project has an estimated Federal cost of $960,000. Local interests here must furnish lands, rights-of-way, and maintain and operate the project.

In addition, they must contribue $50,000 toward the cost of construction in view of the land enhancement benefits involved.

The project has a benefit-to-cost ratio of 1.24 to 1. That is a slight change from the figure carried in your justifications based on more recent data.

This project is now in its late stages of planning. The amount requested for fiscal year 1956 is $350,000. We will receive the local interest contribution of $50,000 in fiscal year 1956.

Mr. KIRWAN. It is strictly for flood control; is it not?

Colonel STARBIRD. The primary benefits are flood control, sir.

Mr. KIRWAN. What percentage of the flood will this project control?

Colonel STARBIRD. This will take care of about 85 percent of the flooding. About 7 percent of the project benefits are land enhancement and the remaining benefits represent a reduction in flood damage.

Mr. KIRWAN. If this takes care of only 10 citizens, even though the project costs $1 million, it is worthwhile.

Colonel STARBIRD. This takes care of an exceedingly large area.

Mr. KIRWAN. If it takes care of only 10 citizens, it is worthwhile and well worth $1 million. It is going to take care of more than that, but if it did just take care of 10, it would be worthwhile.

Colonel STARBIRD. In this flood plain there are about 405 acres altogether, with a property evaluation of over $7 million. Much of the industry of the city, including the power and light plant, is located in the flood plain.

Mr. KIRWAN. It is a well worthwhile project. That is all I have, Mr. Chairman.

Mr. MARSHALL. The committee will stand adjourned until 2 o'clock.

AFTERNOON SESSION

Mr. MARSHALL. The committee will be in order. Mr. Taber, we went ahead and discussed a few projects after you were called to the other meeting this morning. If you wish to ask any questions on these projects now, you are certainly welcome to do so.

ST. MARYS RIVER-BRIDGE ISLAND

Mr. TABER. Thank you, Mr. Chairman.

What you are trying to do in this St. Marys job is to clean out the entrance to one of the locks, which has certain obstructions; is that it?

Colonel ALLEN. That is correct, sir.

Mr. TABER. Does this sum which is being asked cover the cost of it?

Colonel ALLEN. No, sir; that is just enough to initiate the work in this fiscal year. The figure of $2,933,000 will be required to complete the project.

Mr. TABER. How big a job is it?

Colonel ALLEN. It involves the relocation of a railroad bridge and the removal of an island on which the present railroad bridge is built. I have a photograph here, if you would like to look at it, sir [exhibiting photograph].

It is this island here [indicating] on which there is a swing railroad bridge. That island obstructs the entrance to the Poe and MacArthur locks. We have authority to remove that island, and to replace the existing bridge with a lift bridge.

This is a different view of the bridge and one of the entrances on the side of it [exhibiting picture].

The clearances there now are 101 feet and 107 feet respectively on either side of the bridge island.

Mr. TABER. What kind of a bridge do they have there?

Colonel ALLEN. There is a railroad swing bridge there now.

Mr. TABER. What will you have when you get through?

Colonel ALLEN. We will have a lift bridge which will span the entire canal, rather than being sited in the middle as it is now, to provide complete clearance.

Mr. TABER. This is the big lock?

Colonel ALLEN. Yes, sir. One of the locks that is served by that entrance channel is the MacArthur lock, which is the deepest lock.

Mr. TABER. What are you going to do with the traffic while you do the job?

Colonel ALLEN. It will require a modification of traffic but will not require cessation of the use of the MacArthur lock.

Mr. TABER. How long is the island?

Colonel ALLEN. The island is on the order of 1,000 feet long.

Mr. TABER. How much of this cost is for the new bridge?

Colonel ALLEN. The bridge cost at the moment is $2.2 million out of the $3.3 million.

Mr. TABER. How long is the bridge?

Colonel ALLEN. The bridge now spans the waterway and is approximately 200 feet long.

Mr. TABER. That seems like a big price for that length of bridge, even if it is a lift bridge. You will not have traffic on it when you lift it, of course?

Colonel ALLEN. No, sir, there will be no traffic on it when it is lifted. It is not a highway bridge. It is a railroad bridge and, of course, will be in the raised position except when railroad trains pass the bridge, at which time it will be lowered. It is in the open position now, as you see, which is the normal position. It is closed for the passage of the railroad trains.

Mr. TABER. That seems like a big price for a bridge of that length. What is the matter with the present setup?

Colonel ALLEN. Navigation into and use of the maneuvering area is limited by the present narrow channel clearances of 101 and 107 feet, which makes navigation into and out of the 2 lock chambers which are served by this channel difficult.

DULUTH-SUPERIOR HARBOR

Mr. TABER. On this Duluth job you are asking for $215,000 to complete the project.

Colonel ALLEN. That is correct, sir.

Mr. TABER. How deep is the channel?

Colonel ALLEN. The channel is 25 feet deep.

Mr. TABER. What do you have to do?

Colonel ALLEN. We have to complete the portion that is in red to 25 feet. With funds made available in 1955 we did the green portion. This will complete the entire project to 25 feet.

Mr. TABER. This is a channel?

Colonel ALLEN. It is a channel between the Duluth entrance and the Superior entrance to the Duluth-Superior Harbor.

Mr. TABER. The harbor is the same for both Duluth and Superior?

Colonel ALLEN. It is called the Duluth-Superior Harbor; yes, sir.

Mr. TABER. What is the green?

Colonel ALLEN. The green, sir, is the work which was done with fiscal year 1955 funds.

Mr. TABER. That is supposed to be pretty well done?

Colonel ALLEN. Yes, sir; it is. We did half of the channel so that we could have partial use of that channel through 1955 and a portion of 1956. The balance will be done this summer under a continuing contract.

Mr. TABER. The channel is 4 or 5 miles?

Colonel ALLEN. The channel runs from mile 2 to about mile 5.5, about 3½ miles.

Mr. TABER. I believe that is all I have on that project.

BUFFALO HARBOR

Mr. TABER. The next one is Buffalo Harbor. You are asking for $1.2 million. You have had $3.1 million. Last year you had $1.1 million.

Colonel ALLEN. Yes, sir. This will continue the work at the Buffalo River Channel which was started with 1955 funds, and permit the completion of the Buffalo River Channel project to a depth of 22 feet in soft material and 23 feet in rock. It now has a depth of 20 feet.

Mr. TABER. Part of this seems to be out by the breakwater, and part of it seems to be at the other end.

Colonel ALLEN. The red portion is the portion that will be done with the 1956 funds. We will complete the upper end of the Buffalo River Channel and widen the other half of the entrance channel. Part of the entrance channel was done this year so that we would have partial use of the improvement. The red will complete a major portion of the entrance channel.

Mr. TABER. How is the job going along?

Colonel ALLEN. It is going along all right, sir.

CLEVELAND HARBOR

Mr. TABER. The next is Cleveland Harbor. You are asking $5.3 million.

Colonel ALLEN. Yes, sir. This is the heaviest year for appropriations, because four of the bridges which are being replaced under this project are under construction now. They are in the stage of the steel superstructure, where high expenditures are required for the steel and its erection.

Mr. TABER. It is just bridges that are under construction; is that right?

Colonel ALLEN. There are bridges of insufficient width, which are being widened to provide for a wider channel in the Cuyahoga River. The bridges are being altered under the provisions of the Truman-Hobbs Act, and there is some contribution from the bridge owners.

Mr. TABER. How much?

Colonel ALLEN. The total cost to the railroads for the bridges is $4 million. That is their share of the reconstruction costs.

Mr. TABER. It is all railroad cost?

Colonel ALLEN. That is all railroad cost. The city of Cleveland has relocated, rebuilt three highway bridges for the project entirely at their expense, estimated on the order of $2½ million.

Mr. TABER. Why do you need $5.3 million for this coming year?

Colonel ALLEN. There are four bridges in the stage of construction when high expenditures are required for steel and steel erection. This is the heaviest year of the program for this project, and, accordingly, for appropriations.

Mr. TABER. Are they just single-track bridges, or are they wider?

Colonel ALLEN. There are double-track and some single-track. They vary, sir.

Mr. TABER. If the railroads are putting up $4 million, $5.3 million sounds like a considerable item for us. Do you have any data on the cost?

Colonel ALLEN. The cost for the railroad bridges, Mr. Taber, was apportioned under the principles of the Truman-Hobbs Act, which sets forth a method of apportioning costs between the bridge owners and the Federal Government when they are being relocated after it has been determined there is obstruction to navigation. In that cost allocation the life of the bridge is considered. Any improvement to the bridge, such as increased carrying capacity or any betterments desired by the bridge owner, involve costs chargeable to the bridge owner.

Mr. TABER. How wide is this?

Colonel ALLEN. The widths vary, Mr. Taber, in the Cuyahoga River. The improvement is going to vary from the present project width of 160 feet up to width of 230 feet. In the upper end the project width is 125 feet, and we are improving that to the extent possible to 200 feet.

Mr. TABER. These bridges cost a few million dollars apiece?

Colonel ALLEN. Yes, sir; the contract costs for individual bridges run from $3.1 million in one case and $2.9 million in another case up to a maximum of $4.7 million in the case of bridge No. 15.

Mr. TABER. That is a pretty wide span.

Colonel ALLEN. The navigation is aggravated, as you will notice.

Mr. TABER. By a curve?

Colonel ALLEN. By the alinement of the stream. The ore carriers must be maneuvered through these draw spans by towboats. It takes considerable time to get up the Cuyahoga River after they have entered Cleveland Harbor. The navigation up the Cuyahoga River is restricted by reason of the existing bridges. With the transition to larger carriers, as the smaller carriers become obsolete, the urgency of this project becomes more apparent. Our lake carriers are longer with broader beams, and carry more tonnage.

Presque Isle Peninsula

Mr. Taber. The next one is Presque Isle Peninsula, near Erie.

Colonel Allen. Yes, sir. This is a beach erosion project. You will notice in the justification sheet that there is a high percentage of local cost, in excess of $4 million, with a Federal estimated cost of slightly in excess of $2 million.

Mr. Taber. This is a new start?

Colonel Allen. This is the start of it; yes, sir. The State of Pennsylvania has already appropriated $2½ million as a start, for their contribution toward this project.

Mr. Taber. This job is in the harbor?

Colonel Allen. No, sir; it is on the peninsula outside the harbor.

Mr. Taber. Outside the harbor?

Colonel Allen. Yes, sir. It is on the lake side of the Presque Isle Peninsula. It is being constructed in order to stabilize that very narrow barrier beach which exists between Erie Harbor and the lake.

Mr. Taber. There is one stretch of about 5,000 feet where the beach is pretty narrow. The rest of it seems to have quite a lot of body to it.

Colonel Allen. Yes; it is the area shown in red where they had their serious difficulty here about a month or so ago, when they had some very severe storms on the lake.

Mr. Taber. Do they need the other part of it? They may need 600 feet or 800 feet on the west side and maybe 1,000 feet on the east side, but the rest of it looks as if it were 400 or 500 feet wide.

Colonel Allen. That is correct, sir, but there has been progressive erosion. If the entire spit where there is severe erosion is not stabilized it is a question of transferring the problem area from the now existing narrow area to the other location.

Wellsville

Mr. Taber. The next project is Wellsville. This is a flood-control job?

Colonel Starbird. Yes, sir; local protection. Primarily it is channel improvement.

Mr. Taber. It covers about a mile of territory?

Colonel Starbird. It is a little longer than that, sir. Actually it is 9,000 feet on the Genesee River and about 4,500 feet on Dyke Creek.

Mr. Taber. What is the story on that?

Colonel Starbird. This is to protect the population over all, sir, of about 6,500 people. The largest flood of record was in 1950 and caused damages of $320,000. There was a second flood that same year that caused damages of $83,000. There were lesser damaging floods in 1946, 1932, 1936, and 1951.

The project would enlarge the channel so that the 1950 record flood could pass safely, sir.

Mr. Taber. You mean you are deepening the channel?

Colonel Starbird. It is primarily a widening of the channel, sir, to give it a consistent bottom width of about 100 feet.

Mr. Taber. How high are the dikes?

Colonel Starbird. There is not any real dike there, sir. It is just the improvement of the channel; the equivalent of clearing and snagging projects you are familiar with. There is one place where we are spoiling the material and creating a low 2- to 3-foot dike. That sec-

tion is near the upper end of the red. Except for that one low section of about 500 feet a diking problem is not involved.

Mr. TABER. How does the river flow?

Colonel STARBIRD. From the bottom of the map to the top, sir. The top is the north.

Mr. TABER. Does it run into the Susquehanna?

Colonel STARBIRD. No, sir; it is a part of the Genesee, actually. The Genesee runs on north, running into Lake Ontario at Rochester.

Mr. TABER. Is there any local contribution?

Colonel STARBIRD. Yes, sir; there is. They have to furnish the lands, rights-of-way, and relocations at an estimated cost to them of $122,000. They must maintain and operate it upon completion at an estimated cost of $5,000 a year and they must make a cash contribution toward construction of $50,000.

Mr. TABER. I believe that is all I have.

NIAGARA REMEDIAL WORKS

Mr. MARSHALL. We now come to the Niagara Remedial Works, which is a joint project with Canada. We will insert in the record at this point pages 54, 55, and 56 of the justifications.

(The information is as follows:)

NIAGARA REMEDIAL WORKS, NEW YORK (CONTINUING)

Location.—(*a*) Work to be done by the United States: Flank excavation in the Horseshoe Falls Cascades adjacent to Goat Island.

(*b*) Work to be done by Canada: Chippawa-Grass Island pool control structure in Niagara River extending out from the Canadian shore into the river and located approximately 250 feet downstream of present submerged weir. Flank excavation in the Horseshoe Falls Cascades adjacent to the Canadian shore.

Authorization.—Treaty of February 27, 1950, between the Governments of Canada and the United States. Construction of works in accordance with report of International Joint Commission dated May 12, 1953.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$8, 550, 000	
Estimated Canadian costs	8, 550, 000	
Estimated project cost	17, 100, 000	
Appropriations to June 30, 1954	1, 500, 000	
Appropriations for fiscal year 1955	2, 000, 000	
Appropriations to date	3, 500, 000	41
Appropriations requested for fiscal year 1956	3, 400, 000	81
Balance to complete after fiscal year 1956	1, 650, 000	

PHYSICAL DATA

United States construction: Flank excavation in the Horseshoe Falls Cascades adjacent to Goat Island, including the necessary cofferdams and a 300-foot crest fill adjacent to Goat Island, with a concrete retaining wall surrounding the fill.

Canadian construction: Chippawa-Grass Island Pool control structure including necessary cofferdams. The structure will extend out from the Canadian shore some 1,550 feet into the river about 1 mile above the crest of Horseshoe Falls. It will consist of piers and 13 movable control gates.

Flank excavation in the Horseshoe Falls Cascades adjacent to the Canadian shore, including the necessary cofferdams and a 100-foot fill on the Canadian end of the crest with a concrete retaining wall enclosing the fill.

STATUS (JANUARY 1, 1955)

Excavation and fill on United States flank of Horseshoe Falls: 67 percent completed.
Control structure: 27 percent completed.
Excavation and fill on Canadian flank of Horseshoe Falls: not started.

COMPLETION SCHEDULE

United States construction: August 1955
Canadian construction: June 1957.

JUSTIFICATION

Construction of the remedial works in Niagara River will improve the distribution of flow along the crest of the Horseshoe Falls and control the levels of the Chippewa-Grass Island pool. These works will fulfill the objectives envisaged in the treaty of 1950 respecting the use of the waters of Niagara River and will provide the remedial works necessary to preserve and enhance the beauty of the falls.

Fiscal year 1956.—The requested amount of $3,400,000 will be applied to:

(*a*) United States work:	
Completion of construction	$4,100
Engineering and design in connection with entire project	8,500
Supervision and administration in connection with entire project	101,200
(*b*) Canadian work: Reimbursement to Canada for United States share of costs	3,691,600
Subtotal	3,805,400
(*c*) Less anticipated reimbursement from Canada for its share of United States costs	−405,400
Total	3,400,000

Funds requested for budget fiscal year are the minimum funds estimated to be required for continuation of project construction at an economical rate. This amount will provide funds for completion of contemplated construction work by United States on flank of Horseshoe Falls at Goat Island, for continuing required United States engineering and supervision functions on the remainder of project works being constructed by Canada, and for reimbursement to Canada for United States share of costs estimated to be incurred by Canada through fiscal year 1956.

Mr. MARSHALL. We would be glad to hear your statement on this project.

Colonel ALLEN. The funds requested for this project in fiscal year 1956 are required in order to continue work on the control structures in the Niagara River which are being constructed as a result of the treaty between the Governments of Canada and the United States.

Appropriations were made for this project in 1954 and 1955.

The works being constructed will permit the most effective use of water for power generation on both sides of the Niagara River and at the same time preserve and enhance the beauty of the falls by distributing the flows in such a way as to minimize erosion.

The costs of this project are being borne equally by the United States and Canada. Canada is doing the work which lies in Canadian waters and the United States is doing the work lying in United States waters.

The United States portion of the work, which is the lesser of the two, will be completed in 1956. The funds requested are to pay the United States share of both elements of work; the United States work and the Canadian work.

Mr. TABER. You mean that is one job?

Colonel ALLEN. It is considered as one project, the Niagara Remedial Works. However, there is work in Canada being performed by the Canadians, and work being performed in the United States waters by the United States. The cost of the entire project is divided equally.

UNOBLIGATED BALANCE

Mr. MARSHALL. What is the reason for such a large unobligated balance you estimate you will have at the end of the year?

Colonel ALLEN. Our unobligated balance has increased since we first prepared this budget estimate. That is due to the fact that the work being performed by the Canadians, which is being done by hired labor for the most part, as it has gone so far is costing less than originally estimated. It is possible that when the joint parties get together, the Canadian group and the United States group, and reestimate this project on the basis of experience, that there will be some reduction in the cost estimate reflected in the 1957 budget.

Mr. MARSHALL. You will carry these funds over into 1956?

Colonel ALLEN. Into 1956; yes, sir.

Mr. TABER. You will carry them into 1957; will you not?

Colonel ALLEN. If the progress of the work indicates that there will be savings, it would affect the completion money which we would have scheduled in 1957, and reduce it proportionately.

POWER POTENTIAL

Mr. MARSHALL. How much additional power generating potential will result from this project?

Colonel ALLEN. I will ask Mr. Weber, with your permission, Mr. Chairman, to talk about the power at Niagara.

Mr. WEBER. I am Mr. Weber from the Office of the Chief of Engineers, and I am also a member of the International Joint Commission under which this remedial works program is being done by the two countries, Mr. Chairman.

The additional power development that will be made possible by this remedial works program will be something on the order of 2 million kilowatts on each side of the boundary. It depends on what point of time you choose to compute the addition. Much of the additional power on the Canadian side is already under development.

The additional power development on the United States side that will be made possible will be approximately 1½ million kilowatts initially and approximately 2½ million kilowatts ultimately if some of the existing developments are redeveloped and if storage works are also provided. But the initial development that would be immediately contemplated and would be needed urgently to fit into the market requirements as they see them right now would be about 1½ million kilowatts.

Mr. MARSHALL. Will that be divided according to the way the construction is done?

Mr. WEBER. No, sir; this power development will be entirely a matter left to each country. The remedial works program is a joint effort of the two countries in which they share the responsibility and cost of preserving the beauty of the falls, and to make the power development possible. Then the power developments that are possible will be done independently by the two countries. They will not join in that the way they do on the St. Lawrence, for example.

Mr. MARSHALL. How will this be divided between the United States and Canada?

Mr. WEBER. The power?

Mr. MARSHALL. Yes.

Mr. WEBER. The power potential will be divided equally between the two countries, except for a small amount of water which Canada puts into the Great Lakes system in Lake Superior, the Long Lac-Ogoki diversion, so-called, which you probably have heard of. Under the treaty it would continue to be governed by an exchange of notes between the two Governments which in effect gives Canada the extra equivalent of 5,000 cubic feet per second at Niagara. The exact implication of that reservation of that 5,000 second-feet is not yet completely known to us. Until we actually develop the power on our side we will not come to a showdown so to speak, as to whether or not we will divide the water exactly equally or divide it with a 5,000 second-foot balance in favor of Canada because of the Lake Superior diversion.

UTILIZATION OF POWER POTENTIAL

Mr. MARSHALL. Why has the United States not progressed as fast as Canada in utilizing the power potential?

Mr. WEBER. When the treaty was negotiated in 1950 the Senate placed a reservation on its consent to ratification saying that any development of power on the United States side would require specific action by the Congress for authorization of the power development. The Congress has had such authorization under consideration at various times since the ratification of the treaty and currently has at least two bills, I believe, under consideration.

These bills that are currently under consideration would provide for licensing by the Federal Power Commission first under one bill to any private enterprise which submitted a satisfactory application, and under the other bill to any applicant who satisfied the requirements of the Federal Power Act as now existing. That second bill would automatically then give preference to a public body if a public body should submit application, and qualified as well or better than a private enterprise application.

Now, until Congress takes the action that it reserved to itself in the 1950 treaty no power development can proceed on the United States side.

Mr. MARSHALL. Mr. Kirwan?

Mr. KIRWAN. Is any of this money being spent for repairs where the cave-ins occurred?

Mr. WEBER. No, sir.

Mr. KIRWAN. None of it?

Mr. WEBER. No, sir. This remedial works program is on the Horseshoe Falls. The cave-in work was on the American Falls, which is an entirely different section.

COST OF ST. LAWRENCE SEAWAY

Mr. KIRWAN. Can you get for me the information as to what it would have cost us in 1940 had we gone ahead with the St. Lawrence seaway project? My understanding is that at that particular time it was about $200 million for the powerplant and waterway.

Mr. WEBER. Are you referring, Mr. Kirwan, to the St. Lawrence?

Mr. KIRWAN. The St. Lawrence, yes.

Mr. WEBER. Not the Niagara.

Mr. KIRWAN. Not this particular project, but the St. Lawrence.

Mr. BRENNAN. Perhaps I can help on that. The construction cost index, sir, has gone up exactly 2½ times between 1940 and 1955. On that basis the cost would have been 40 percent of what it is now.

Mr. KIRWAN. The construction costs have gone up that much?

Mr. BRENNAN. Yes, sir.

Mr. KIRWAN. If my memory serves me correctly, that is what it was. For a couple of hundred million dollars we could have built the powerplant and the St. Lawrence seaway would have been in service today, if we had authorized it. The Rivers and Harbors Committee went down from the headwaters to Quebec, and took a week to make the trip, and then they came back and rejected it. Only five members of the committee voted for it. Now look at the difference we are paying today because we did not take the action we should have on that day. They foresaw the possibilities that we are working on now, on the St. Lawrence. We would have owned the whole thing for less money than it is going to cost now, and we only get a half interest.

That is all.

TYPE OF CONSTRUCTION AT NIAGARA

Mr. MARSHALL. If these remedial works had been put in earlier at Niagara would that have prevented this cave-in last summer?

Mr. WEBER. No, sir.

Mr. TABER. What sort of construction are you going to put in here?

Mr. WEBER. There are two kinds of construction, Mr. Taber. On either flank of the Horseshoe Falls there is this excavation work. To lower the part of the river at the flank of the Horseshoe Falls in order to permit water to spread over to those extreme flanks where it is very thin now, we have to dig down a little to get the water over there to make a uniform flow over the crest.

Mr. TABER. In other words, the center is presently lower than the sides?

Mr. WEBER. Exactly, sir. There is a certain amount of that excavation on the United States side of the Horseshoe Falls and on the Canadian side. Altogether those two excavation jobs amount to about $3 million worth of the total job. The other fourteen-million-odd-dollars worth of the total job is a control structure extending out from the shore upstream from the brink of the falls, extending out from the shore on the Canadian side about 1,500 feet out into the stream. This control structure is really just a series of piers with gates between the piers in order to permit the flow of the river down towards the falls to be obstructed at certain portions of the channel in order to guide it to the proper portion of the brink of the falls on varying flows that we will encounter. That is the theory of the construction.

Mr. TABER. Is all of this construction part of the power development, when that is started?

Mr. WEBER. Yes, sir; in the sense that it has always been contemplated that whenever the power was developed the cost of these remedial works as far as the United States is concerned will be charged against that power development. If the United States Federal Government should decide to develop the power of course the cost is just a matter of bookkeeping. If a license is granted to the Power Authority of the State of New York or to a private enterprise the recommendation has already been made by our International Commission, and has already been made of record before the Congress, that the license should include a provision for the power entity to reimburse the United States for these costs. In that sense it would be part of the power development project.

Mr. TABER. On this map, indicated in green, there is a setup shown over near Goat Island, where the excavation is supposed to be, which is going to be developed with the funds for fiscal year 1955. Then there is shown in red over on the Canadian side some other work, with an indication that there was an excavation to go in there, also. Does that mean that the United States Government is paying for the job on the Canadian side, too?

Mr. WEBER. No, sir.

Mr. TABER. Why is that in red?

Mr. WEBER. Well, the United States is paying one-half of the cost of the work on both sides, and Canada is paying the other half of the cost of the work on both sides. In other words, the fact that only a small portion of the work is on our side of the boundary line and a greater portion of the work is on the Canadian side of the boundary line is merely an accident of topography and geography. The fair thing, it was considered in negotiating the treaty, was for the two countries to agree to share the cost of the work equally between them regardless of whether it was located on one side of the boundary or another. This sketch that you have shows all the work being done in both countries and the total cost of that job. Our share of it in the United States is only half.

Mr. TABER. What about this other picture? There seems to be a considerable portion of water coming over the American Falls. Does that mean that that is a future subject for development or not?

Mr. WEBER. No, sir.

Mr. TABER. What does that mean?

Mr. WEBER. The flow over the American Falls will remain essentially as it is today. It ranges from about 8,000 cubic feet per second during the lower range of the total flow to about 12,000 cubic feet per second for the extreme high total flows. Within that range the spectacle on the American Falls is entirely satisfactory.

This plan of remedial works was designed to correct the condition on the Horseshoe Falls and to maintain essentially the status quo of the American Falls.

Mr. TABER. Is the power that comes out of the river to be divided equally?

Mr. WEBER. Yes, sir.

Mr. TABER. How much power did you say there was involved in this?

Mr. WEBER. Ultimately 2½ million kilowatts on our side, of which an initial development of 1½ million kilowatts is considered the most urgent and immediately needed to meet the market forecast.

Mr. TABER. That is all I have.

GREAT LAKES WATER LEVELS

Mr. MARSHALL. Mr. Weber, we were discussing a short while ago an item of $300,000 for a special study of the Great Lakes water levels. I understand this is a sum contributed by the United States for this project for which Canada is not contributing any funds. We were concerned about how that came about. Could you explain that to us?

Mr. WEBER. Yes, sir. The work that the Corps of Engineers is doing now on the Great Lakes water-level study is entirely a domestic effort, a report requested by Congress. However, it fits in with certain work that is being done by Canada but not directly as a part of the specific study that you were considering this morning.

Mr. MARSHALL. This data will be valuable to them, will it not?

Mr. WEBER. Yes, sir; and ultimately would form the foundation, perhaps, for a joint study of anything that comes out of our study that indicates a need for international action.

Mr. MARSHALL. What has been the cost of the damage on the Canadian side of Lake Erie during this high-water period?

Mr. WEBER. Sir, we have no figures or estimates comparable to our own United States estimates for damages on the Canadian side. They have not conducted surveys comparable to our surveys. However, we do know from testimony which the International Joint Commission has obtained in public hearings up in that area that on Lake Ontario, for example, conditions are very similar to those on the United States side. It is entirely conceivable that the damages on that lake would be quite similar to those on the United States side, where they were estimated in 1952 to be about $7 million for Lake Ontario.

Mr. MARSHALL. We have a joint responsibility on water levels with Canada; do we not? As a matter of working out any arrangements we have to work those out with them?

Mr. WEBER. Yes, sir. By treaty between the United States and Canada the boundary waters are handled in accordance with the terms of the treaty. Specified procedures are agreed to in the treaty. Among other things that treaty created an International Joint Commission which deals with those problems from time to time as they arise.

Mr. MARSHALL. Have you had any difficulties?

Mr. WEBER. Yes, sir; we have problems arising. We are dealing with them on a continuing basis.

I can give you one example. In Lake Superior, for example, the level of Lake Superior has been changed from a natural level to a controlled or artificial level by the construction of locks and compensating works in the Sault, and the Commission through a board of control continually exercises jurisdiction to see to it that the conditions under which that construction was originally approved are carried out. If the locks should be operated by the Corps of Engineers or by their Canadian counterparts in a manner in violation of that agree-

ment it would be the duty of this Commission to call attention to that and to take steps to rectify it. There has never been any necessity for that sort of action, but the machinery is there.

Mr. MARSHALL. Canada has been concerned about these high-water levels in Lake Erie and Lake Ontario?

Mr. WEBER. Yes, sir; they are concerned, just as our people are.

Mr. MARSHALL. What have they been doing about it?

Mr. WEBER. They have had a number of developments, primarily at the Provincial level. Since their agencies which deal with these matters are organized somewhat differently from ours we find that the work of a comparable nature to ours is not necessarily done at the Federal level in Canada but more often at the Provincial level. In this instance the Province of Ontario has made a considerable study of the property damage. Though not strictly comparable to ours it is a beginning and it indicates their interest in and concern with the problem.

OPERATIONS AND MAINTENANCE

Mr. MARSHALL. The next item which we have for consideration is the item of "Operations and maintenance," and this section of the budget provides for a total of $8,604,000 for the operation and maintenance of some 50 or 60 projects in the Great Lakes and St. Lawrence area.

We will place in the record at this point pages 60 through 65 of the justifications, which show a breakdown of these funds.

(The pages referred to follows:)

GREAT LAKES-ST. LAWRENCE BASIN

JUSTIFICATION OF ESTIMATE

1. *Navigation*

(*a*) *Channels and harbors.*—The work to be accomplished under this activity consists of maintaining the navigation channels and harbors of Great Lakes harbors and waterways by means of dredging, snagging, and repairing harbor jetties and breakwaters; and periodic inspections and surveys to determine the condition of the projects for programing purposes and providing navigation interests with adequate information on existing channel conditions; all as authorized in the laws adopting river and harbor projects.

The budget estimate of $5,892,000 for fiscal year 1956 is required for essential maintenance work on 51 channel and harbor projects named in the list which follows. The projects listed have been subjected to an economic analysis and determined that continuing maintenance is justified. The amount of funds appropriated in recent years for this activity has not been sufficient to provide for the adequate and timely maintenance of all justified projects and has resulted in a substantial backlog of work, particularly structural repairs and the maintenance of moderate and shallow-draft navigation channels. This condition continues to exist.

Tentative allocation, fiscal year 1956

Illinois:	
Calumet Harbor and River, Ill. and Ind	$170,000
Chicago Harbor	350,000
Waukegan Harbor	190,000
Indiana: Indiana Harbor	60,000
Michigan:	
Au Sable Harbor	250,000
Channels in Lake St. Clair	80,000
Charlevoix Harbor	10,000
Detroit River	195,000
Frankfort Harbor	10,000
Grand Haven Harbor and Grand River	120,000

Tentative allocation, fiscal year 1956—Continued

Michigan—Continued	
Holland Harbor	$15,000
Keweenaw Waterway	60,000
Ludington Harbor	15,000
Manistee Harbor	20,000
Manistique Harbor	25,000
Marquette Harbor	25,000
Menominee Harbor and River, Mich. and Wis	20,000
Muskegon Harbor	15,000
Ontonagon Harbor	20,000
Presque Isle Harbor	25,000
Rouge River	85,000
Saginaw River	200,000
St. Clair River	30,000
St. Joseph Harbor	35,000
South Haven Harbor	25,000
White Lake Harbor	20,000
Minnesota: Duluth-Superior Harbor, Minn. and Wis	390,000
New York:	
Buffalo Harbor	335,000
Dunkirk Harbor	35,000
Great Sodus Bay Harbor	20,000
Niagara River	5,000
Ogdensburg Harbor	5,000
Oswego Harbor	50,000
Rochester Harbor	100,000
Ohio:	
Ashtabula Harbor	105,000
Cleveland Harbor	920,000
Conneaut Harbor	160,000
Fairport Harbor	100,000
Huron Harbor	60,000
Lorain Harbor	170,000
Sandusky Harbor	90,000
Toledo Harbor	335,000
Pennsylvania: Erie Harbor	130,000
Wisconsin:	
Green Bay Harbor	60,000
Kenosha Harbor	25,000
Manitowoc Harbor	20,000
Milwaukee Harbor	470,000
Sheboygan Harbor	20,000
Sturgeon Bay and Lake Michigan ship canal	130,000
Two Rivers Harbor	35,000
Condition surveys	52,000
Total channels and harbors	5,892,000

(*b*) *Locks, dams, reservoirs, and canals.*—The estimate of $552,000 for fiscal year 1956 provides for the operation and ordinary maintenance of the locks and dams, essential channel work, dredging, and the most urgent repair of the structures at two projects. The rehabilitation work includes such items as lock gate repairs and overall painting of movable dam parts, valve rehabilitation, and navigable dam parts replacement. The estimate contemplates operation of the projects with the utmost economy consistent with the importance of the waterways to the national economy.

Tentative allocation, fiscal year 1956

New York: Black Rock Channel and Tonawanda Harbor	$294,000
Wisconsin: Fox River	258,000
Total locks, dams, reservoirs, and canals	552,000

(*c*) *Surveys of northern and northwestern lakes.*—The budget estimate of $460,000 provides for the continuation of the program of revision of Great Lakes

navigation charts which has become necessary because of the increase in traffic in vessels of larger size and deeper draft. Traffic of this nature will undoubtedly increase further upon the completion of the St. Lawrence seaway, and up-to-date navigation charts will then be doubly essential. The amount requested herein is $20,000 less than the amount available in fiscal year 1955 and about $40,000 less than actual obligations during fiscal year 1954.

Surveys of northern and northwestern lakes	$460,000
Total navigation	6,904,000

2. *Flood control*

(*a*) *Reservoirs.*—The budget estimate of $45,500 provides for the operation and ordinary maintenance of one flood control reservoir in the Great Lakes-St. Lawrence Basin during fiscal year 1956, and nondeferrable rehabilitation work. The amount requested in fiscal year 1956 is approximately $10,000 less than the amount available in fiscal year 1955, and is the minimum necessary for adequate and efficient operation and maintenance of the project.

Tentative allocation fiscal year 1956

New York: Mount Morris Reservoir	$45,000
Scheduling of flood-control reservoir operation	500
Total flood-control reservoirs	45,500

(*b*) *Other (including channel improvement projects, miscellaneous maintenance items and inspections).*—The budget estimate of $4,500 provides for ordinary maintenance of the Sebewaing River, Mich., project and for inspection of of completed works in the basin.

Michigan: Sebewaing River	$3,000
Inspection of completed works	1,500
Total flood control, other	4,500
Total flood control	50,000

3. *Multiple purpose projects including power.*—The budget estimate of $1,650,000 provides for operation, maintenance, and rehabilitation necessary for operational requirements during fiscal year 1956 for the Soo locks and the powerplant.

Tentative allocation fiscal year 1956

Michigan: St. Marys River	$1,650,000
Total multiple-purpose projects including power	1,650,000
Grand total Great Lakes-St. Lawrence Basin	8,604,000

SURVEY OF NORTHERN AND NORTHWESTERN LAKES

Mr. MARSHALL. Would you tell us a little more about this item than appears in these justifications, and about the project "Survey of northern and northwestern lakes"? Is it a continuing project, and, if so, how much has been done on it during the last few years, and what would be the total estimated cost over how many years?

Colonel POWERS. The survey of the northern and northwestern lakes is a continuing project. The water surface area is more than 95,000 square miles, with a shoreline of over 8,300 miles in the Great Lakes area, which requires a surveying service and a charting service for the accommodation of navigation, both commercial and recreational.

The area covered by the survey organization which accomplishes this work is not only the Great Lakes themselves, but the connecting streams, as far down the St. Lawrence River as the international boundary at St. Regis, 66 miles above Montreal.

The work is confined primarily to the United States territory, except for the depiction of such Canadian waters and shoals as may be essential to the integrity and usefulness of charts, showing the locations contiguous to the boundary, and those which cover an entire lake or a river.

We publish a bulletin annually, showing the conditions on the lakes, and issue supplements monthly during the navigation season.

Up-to-date navigation charts are essential if we are going to have safe navigation for the ore carriers, and other commercial vessels including the Coast Guard and other Government craft.

The draft of the lake vessels is constantly increasing, and the St. Lawrence seaway will increase the lake traffic by bringing deep-draft ocean vessels into the lake.

A large percentage of the area covered under this survey program in the offshore waters of the Great Lakes has not been sounded since the original survey which was made immediately before and after the Civil War.

Many of these areas must be crossed frequently by vessels engaged in shipping and this requires that we revise our survey data as frequently as possible. Presently, as I mentioned, there are some charts covering some areas which were developed prior to 1875. However, we must apply the more accurate and modern methods to our sounding procedures, and produce modern charts in order to safeguard the vessels from the potential danger of costly accidents.

We instituted in 1954 a 15-year program of soundings to replace those made prior to 1875. In that fiscal year, we expended $504,900, and in fiscal year 1955 we estimate that we will expend $480,000. The amount of $480,000 in fiscal year 1955 would not permit us to maintain the schedule which we had planned in the 15-year program, and we are now falling behind in that program. The amount of $460,000 requested in fiscal year 1956 is the minimum necessary to turn out the charts needed during this fiscal year, and will not permit us to catch up on the lag in the 15-year program.

So, the reinstitution of the 15-year program must be deferred again.

PRIOR YEAR FUNDS

Mr. MARSHALL. Colonel Powers, how does this year's request totaling $8,604,000 compare with the amounts which you spent on operations and maintenance during the last 5 years? You may just submit the statistics for the record, if you will.

Colonel POWERS. Yes, sir.

(The information requested follows:)

Funds obligated for operations and maintenance, Great Lakes Basin, fiscal years 1952 through 1956

Fiscal year 1952, actual	$6,170,000
Fiscal year 1953, actual	7,371,100
Fiscal year 1954, actual	8,401,900
Fiscal year 1955, estimated	7,345,000
Fiscal year 1956, estimated	8,767,600
Budget request, fiscal year 1956	8,604,000

DETERMINATION OF MAINTENANCE REQUIREMENTS ON CHANNELS AND HARBORS

Mr. MARSHALL. Are there any other comments which you wish to make about the operations and maintenance section of the budget?

Colonel POWERS. I think it would be appropriate, Mr. Chairman, to explain to some extent the means by which we have determined not only in this basin, but countrywide, our maintenance requirements on channels and harbors.

For some years, it has been evident that the funds appropriated for accomplishing the needed maintenance work on our channels and harbors has been inadequate to permit us to meet all of the requirements which have existed. We have had numerous changes during each of the fiscal years among the allocations that we had planned to make at the beginning of the year. The allocations had to be changed by the end of the year in order to meet emergency situations.

Last year, or during the present fiscal year 1955, we have reviewed every completed navigation project in the United States, totaling 850 projects. We found of those 850 projects that maintenance was no longer justified on 140 projects. We found that 312 projects would not require dredging in the next 3 years, nor structural repairs in the next 6 years. We found for those same 2 periods that 398 projects either currently had or would within those periods have maintenance requirements, and 206 of those projects are included in the budget this year. We have not requested funds in a greater amount for channel and harbor maintenance for fiscal year 1956 than were available in 1955.

We have worked out the program for the 3-year dredging period, and the 6-year period of structural repairs, and have found that we have a backlog of $46 million worth of structural work, and $23 million worth of dredging, which must, or should be cleared out, within those periods.

Before asking Congress for additional funds toward reducing that backlog, we are taking steps to insure that we get the greatest amount of maintenance work accomplished with the funds which the Congress has furnished us.

Our program has involved a change in our method of performing condition surveys in order to determine just what the status of the projects are. In the past, our condition surveys have consisted of detailed soundings of the entire length and width of the projects in order to show exactly what the bottom conditions were. Those were very expensive, and sometimes were made in 1 fiscal year, and yet funds were not available for dredging for 2 or 3 years later, during which time we had to make another detailed survey.

We have instituted this year a program of reconnaissance surveys, whereby we determine conditions either by talking to the boat operators, going out with a boat equipped with a fathometer, which provides a long single line of soundings down a channel, or in some cases we make only a few scattered lead soundings from a small boat, and have been able to get enough picture of what the general conditions are like, and what the navigation problems are in order to determine whether or not we should ask for funds. Then, if funds are requested, within a reasonable time, before obtaining the funds an exact condition survey is prepared. When the funds are available, that same sur-

vey is used to enable us to let a contract and start the contract work. We have saved a considerable amount of money in that manner.

We have also effected a much more rigid control of the projects which are permitted to be included in our program, by requiring in fiscal year 1954 an economic analysis of all navigation projects for channels and harbors prior to authorizing funds to be expended.

In 1955, in preparation for this next fiscal year's budget, we have added projects which had not previously been analyzed, but in those cases, each of those has been analyzed.

We have also instituted a type of control which would permit us to spend very nearly every dollar which is appropriated for "Operations and maintenance" within the year in which it is appropriated. Those steps which I have enumerated will enable us to accomplish during 1955 approximately $5 million more worth of work than we did in 1954.

On the basis that we receive the funds set forth in the budget request for 1956, we will similarly perform $5 million worth more of work than we did in 1954.

With that initial effort on our part to pinpoint the requirements, and establish complete utilization of our funds, we would be able to produce more dredging work or repair work for the dollar. We expect that in future years we will begin to reduce our backlog.

As a result of our review of projects in the Great Lakes area, and in the St. Lawrence Basin, there are 120 authorized and completed projects, and we found that 7 of those were no longer justified. We found that 31 will not require work in the next 3 years for dredging, and the next 6 years for structural rehabilitation. We found that 82 require work over those periods, and we are requesting funds for 50 in fiscal year 1956.

I might say that the allocations shown in the budget requests are tentative in nature, have been reviewed in January of this year, and are again being reviewed currently. The committee will be furnished a final allocation during the first week of May.

Thank you, sir.

SURVEYS OF NORTHERN AND NORTHWESTERN LAKES

Mr. KIRWAN. What did you say the Bureau of the Budget allowed you this year for sounding surveys? You say you are back in the 15-year program.

Colonel POWERS. For the survey of the lakes?

Mr. KIRWAN. Yes, sir.

Colonel POWERS. The Bureau of the Budget allowed us $460,000.

Mr. KIRWAN. What do you feel you could actually use?

Colonel POWERS. Approximately $100,000 additional, sir.

Mr. KIRWAN. However, at the same time you feel you would save more money by discovering the true and actual situation now. If you had another $100,000 you would be able to save money over the 15-year period; is that correct?

Colonel POWERS. That is problematical over the 15-year period. The fact that we could provide more adequate charts for the use of commercial navigation throughout the Great Lakes and particularly since the St. Lawrence seaway will soon be completed, and additional traffic will enter the lakes, the fact that we can provide them more

adequate charts for safe, sure, and quick navigation certainly should produce savings of some nature; yes, sir.

Mr. KIRWAN. That is the main problem. You covered it in your answer earlier. I think it was in 1896 when they smelted the first ton of ore out of the Mesabi Range, and they have been coming down into this area since that time. You can almost put blinders on them and they will come down the same lane, down to the lock, whether it is into Buffalo, or wherever it may be.

However, you are now opening up a new area. The St. Lawrence seaway is coming in there, and when the ships come in they are going to scatter over to the nearest point where they have cargo to unload. You have to keep abreast of changes to know what routes they can use.

Colonel POWERS. Yes, sir.

Mr. KIRWAN. You have to have the necessary information for safety purposes?

Colonel POWERS. Yes, sir; in obtaining data for some of the revised charts which we produced in fiscal year 1954, we found pinnacles of rocks, and obstructions, within a few hundred feet of the main channels.

Mr. KIRWAN. That is the point I am referring to.

Colonel POWERS. We had to remove them with emergency funds for removal of wrecks and obstructions to navigation.

Mr. KIRWAN. That is, of course, expensive.

When you have to institute an emergency measure, it costs two or three times more to do it than if you went in there on a regularly scheduled program. That is true of anything, whether it is a building which you are going to put up, or what. When you go into an emergency program, it costs more than when it is done in the regular turn of events.

I think you people in dredging the lakes area, and in dredging all of the harbors in the United States, the streams, and other water areas, know when you present your case to the Bureau of the Budget what is best, and what is necessary for the safety and for the economy of this country.

That is all, Mr. Chairman.

ECONOMIC ANALYSIS OF NAVIGATION PROJECTS

Mr. BOLAND. Colonel Powers, did you say you are conducting an economic analysis of the navigation projects throughout the Nation?

Colonel POWERS. Yes, sir. About a year ago we submitted to the committee a report of an economic analysis of 268 projects on which maintenance work had been accomplished during fiscal years 1953, 1954, and the contemplated work for 1955.

Mr. BOLAND. Do you have specific personnel detailed for that purpose, and is that all they do?

In other words, do they have other duties in addition to this analyzing work in order to determine whether the project is economically feasible, and whether or not it is worth while continuing.

Is that the reason for the analyses?

Colonel POWERS. Yes, sir; the reason for the analyses is to determine whether or not the economic benefits derived from continuing the maintenance are justified in view of the cost of the maintenance.

Mr. BOLAND. Do you have specific personnel doing that particular work?

Colonel POWERS. In every district office, within the engineering division, they have personnel whose duties involve economic analyses not only in connection with this type project, but any other type of project which might be in the planning stage or in the advanced planning stage, or in the preliminary examination, or report stage. Then, when it comes to the Office of the Chief of Engineers, it is again reviewed by personnel who have that duty as one of their functions.

Mr. BOLAND. This is not anything new; is it? This analysis work must have been a part and parcel of the work of the Corps of Engineers for years; has it not?

Colonel POWERS. The analysis with respect to construction projects, and projects to go into a construction stage, is not something new. That has been done for a considerable length of time, but on the maintenence projects it has not been done in the detail which we currently require.

Mr. BOLAND. Have you ever found that some of the benefits are such that the projects are no longer economically feasible, and perhaps we should not spend any more money on them?

Colonel POWERS. Yes, sir; and I have a list of 140 projects out of our 850 projects which are in that category now.

Mr. BOLAND. I think that is a good program.

That is all, Mr. Chairman.

LAKE HARBORS CARRYING 1 MILLION TONS

Mr. TABER. Do you have available a list of the harbors on the lakes carrying in and out 1 million tons or more, together with the operating cost of each of those?

Colonel POWERS. Such a list has not been prepared, sir, but it can be. The data is available in Washington here, sir.

Mr. TABER. It would not be too much of a job to perform?

Colonel POWERS. No, sir; we can prepare that, and furnish it for the record.

(The information requested follows:)

	1953 tonnages	Estimated annual cost maintenance
Lake Superior: [1]		
Two Harbors, Minn	23,627,485	$16,000
Duluth-Superior Harbor, Minn. and Wis	77,243,545	175,000
Ashland Harbor, Wis	4,129,068	19,000
Presque Isle Harbor, Mich	5,161,233	13,000
Lake Michigan:		
Green Bay Harbor, Wis	3,345,190	60,000
Kewaunee Harbor, Wis	1,046,582	80,000
Manitowoc Harbor, Wis	2,311,554	43,000
Port Washington Harbor, Wis	1,129,147	10,000
Milwaukee Harbor, Wis	8,165,023	575,000
Chicago Harbor, Ill	1,796,719	110,000
Chicago River (main, north and south branches)	7,715,266	46,000
Calumet Harbor and River	23,865,973	125,000
Indiana Harbor, Ind	20,044,665	85,000
Grand Haven Harbor and Grand River, Mich	5,303,988	123,500
Muskegon Harbor, Mich	3,539,093	70,000
Ludington Harbor, Mich	3,172,593	280,000
Frankfort Harbor, Mich	1,745,521	80,000
Grays Reef Passage, Mich	6,415,349	
Sturgeon Bay and Lake Michigan ship channel	1,203,800	120,000
Lake Huron:		
Alpena Harbor, Mich	3,115,774	5,000
Saginaw River, Mich	3,953,397	100,000
Channels in Lake St. Clair, Mich	126,037,780	20,000
St. Clair River, Mich	129,899,214	64,900
Lake Erie:		
Detroit River, Mich	[2] 140,729,410	207,000
Toledo Harbor, Ohio	31,617,522	354,000
Sandusky Harbor, Ohio	8,521,771	125,000
Huron Harbor, Ohio	3,587,086	70,000
Lorain Harbor, Ohio	11,780,986	190,000
Cleveland Harbor, Ohio	23,480,714	900,000
Fairport Harbor, Ohio	2,469,705	110,000
Ashtabula Harbor, Ohio	15,228,497	112,000
Conneaut Harbor, Ohio	16,058,774	120,000
Erie Harbor, Pa	7,318,112	80,000
Buffalo Harbor, N. Y	[3] 22,288,882	400,000
Niagara River, N. Y	[4] 4,501,409	12,000
Black Rock lock, New York	4,385,256	350,000
Lake Ontario:		
Oswego Harbor, N. Y	2,199,030	47,000
Great Sodus Bay, N. Y	1,607,384	40,000
St. Lawrence River between Ogdensburg and Lake Ontario	11,798,013	

[1] Does not include St. Marys River, Mich., a multiple-purpose project (132,982,053 tons. $2,000,000).
[2] Includes port of Detroit and port of Windsor, Ontario, also through traffic of 114,168,482 tons.
[3] Includes 3,946,044 tons through traffic.
[4] Includes 835,260 tons through traffic.

Estimated annual cost of maintenance is based on gross estimated funds requirements averaged over a period of years and does not represent the actual requirements in any 1 year.

MIDDLE ATLANTIC AREA

Mr. MARSHALL. The next area which we will consider is the Middle Atlantic Area, for which there are requests for 1956 totaling $22,550,000.

We will insert the summary breakdown of that amount in the record at this point, along with the schedule of unobligated balances for each of the construction projects in the area.

(The matters referred to follow:)

MIDDLE ATLANTIC

Budget Estimate fiscal year 1956, Corps of Engineers

General investigations	$116,000
Advance engineering and design	375,000
Construction	12,596,000
Operation and maintenance	9,463,200
Total	22,550,000

Middle Atlantic basin

Project	June 30, 1954		Mar. 31, 1955		June 30, 1955 (estimated)	
	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance
Navigation:						
Delaware River-Mantua Creek anchorage	0	0	0	0	0	0
New York and New Jersey channels	−$119,178	$366,901	$423,363	$939,263	0	0
Norfolk Harbor	72,467	592,527	[1] 171,434	[1] 1,711,638	[1] 0	[1] $1,330,000
Alteration of bridges:						
Staten Island Rapid Transit	0	0	0	0	0	0
Norfolk and Portsmouth Belt Line	0	0	0	0	0	0
Shore protection:						
Atlantic City	0	0	0	0	0	0
Cold Spring Inlet	0	0	0	0	0	0
Ocean City	0	0	0	0	0	0
Virginia Beach	0	0	0	0	0	0
Flood control:						
Anacostia River, D. C. and Md	0	0	8,752	651,327	0	0
Cumberland, Md. and Ridgely, W. Va	184,853	238,328	356,657	376,670	0	260,000
Swoyersville-Forty Fort, Pa	115,242	798,648	[2] 74,811	[2] 197,426	[2] 0	[2] 0
Williamsport, Pa	156,929	919,081	181,108	440,536	0	100,000

[1] Excludes $1 million loaned to other projects.
[2] Includes $110,000 loaned to project.

General Statement

Mr. Marshall. We would be glad to hear your opening statement, Colonel Allen.

Colonel Allen. The Middle Atlantic area comprises the Atlantic coastal region from New York Harbor to Albemarle Sound, N. C., inclusive, and covering all or parts of the States of New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, and North Carolina. Principal watersheds are Hackensack-Passaic, Raritan, Delaware, Susquehanna, Potomac, Rappahanock, York, James, and Roanoke Rivers. The region covers approximately 100,000 square miles representing about 3½ percent of the area and about 18 percent of the population of the United States.

The activities of the Corps of Engineers in the Middle Atlantic area in development of water resources include construction, operation, and maintenance for the aid of navigation in the many and important rivers and harbors; construction, operation, and maintenance of single and multiple purpose projects for flood control and related uses including power.

The progressive improvement and extension of the harbors and waterways in the Middle Atlantic area has contributed greatly to national development and has played an important part in the continued growth of its waterborne commerce. In 1953, the net total waterborne commerce of this area was 423 million tons or almost half the total commerce of the United States. That commerce has increased approximately 250 million tons in the past 10 years.

Alleviation of flood damage is a vital factor in the continued growth and development of inland areas in the Middle Atlantic area. Completed improvements have in many cases resulted in community rehabilitation and caused a resurgence of economic activity.

In the portions of the area covered by investigations to date, it is estimated that the average flood damage amounted to $40 million annually. Completed improvements, representing an annual average cost of $8,400,000, have, during the average period of their existence, 8.8 years, produced direct benefits averaging $9,100,000 annually. No evaluation has been made of the indirect and intangible benefits to the economy of the region, but it is considered that these are substantial.

At this time, the authorized flood control program is about 18 percent complete, 7 percent is under construction, and 75 percent has yet to be initiated.

The highly industrialized character of the Middle Atlantic region has given rise to increasing problems of pollution abatement in the streams. Industrial, domestic, and mine wastes are detrimental to other water uses, fish and wildlife, and aesthetic values. The United States Public Health Service is assisting local communities in ameliorating polluted stream conditions and sources. The Corps of Engineers coordinates its studies, plans, and construction with the objectives of improvement of sanitary stream conditions insofar as is practicable with the primary nature of its projects.

This basin is subject to hurricane attacks. The October 1954 hurricane (Hazel) caused appreciable damage through the region from the Carolinas to New York State. Several pending bills would authorize a comprehensive hurricane study for the New England-Atlantic coast, and would thereby enlarge considerably the field of survey and construction activities of the Corps of Engineers.

NAVIGATION

The tremendous increase of tonnage transported on the waterways of the Middle Atlantic area and the use of larger and deeper-draft vessels have emphasized the importance of continuing the development of our waterway resources to meet the growing demands of both our economy and national security. As a consequence of the trend toward larger, deeper-draft carriers, greater depths are required and progressively provided in our harbors and waterways. Deepening of the middle section of Arthur Kill, a part of New York Harbor, from 30 to 35 feet is currently underway. During 1953, commerce on this waterway amounted to 73 million tons, an increase of 110 percent over the traffic at the time of authorization in 1935.

Authorized improvements for navigation total 240 and range from minor projects with shallow draft for navigation, fishing and recreation to major projects for deep-draft commercial traffic with depths up to 48 feet. The federally authorized waterways of the region total over 1,860 miles.

The current overall authorized navigation program in the Middle Atlantic area comprises 240 projects. Work underway consists of Craney Island disposal area under the Norfolk Harbor project and deepening of New York and New Jersey Channels. In addition to continuation of these two projects in fiscal year 1956, enlargement of Mantua Creek anchorage under the Delaware River project has been scheduled. Advance planning for bridge modifications required under the projects Delaware River, Philadelphia to Trenton, and Chesapeake and Delaware Canal is also scheduled for initiation.

FLOOD CONTROL

Flood-control work in this area is concentrated principally in the Susquehanna River Basin in southern New York and central Pennsylvania, the Lehigh River in Delaware Basin, the Potomac River and the Roanoke River watershed. A total of 52 projects have been authorized to date. Of that total, 21 projects are operationally complete. Information will be presented later on those projects which are under construction. Advance engineering and design is substantially completed for two reservoir projects. Six other projects are in various stages of planning. Initiation of planning is tentatively scheduled for fiscal year 1956 on one other reservoir.

OTHER PROJECTS

Four multipurpose projects for flood control and power have been authorized. The Philpott and John H. Kerr Reservoirs in the Roanoke Basin are operationally complete.

There are five cooperative shore protection projects in the States of Virginia and New Jersey. Local interests, at their own expense, have initiated work on four of these projects. Information will be presented later on those which are included in the fiscal year 1956 budget.

Truman-Hobbs Bridge relocations have been authorized for the Staten Island Rapid Transit Railroad bridge (B. & O. Railroad) over the Arthur Kill, New York Harbor and for the Belt Line Railroad bridge over the Elizabeth River, Norfolk Harbor. Both projects are scheduled for initiation of construction in fiscal year 1956.

The present development of this area requires the coordinated improvement of the natural features in order that its economy may continue to expand. The importance of this area to the economy of the Nation is manifest. Federal improvements already completed have assisted in the development of the areas economic potential. The requested appropriation for the work programed in fiscal year 1956 will permit the orderly prosecution of the program to meet the needs of navigation, flood control, and beach erosion.

Mr. MARSHALL. Thank you very much, Colonel Allen.

GENERAL INVESTIGATIONS

We have a sum of $116,000 requested for general investigations. A detailed tentative allocation of these funds, by project, is set forth on pages 1, 2, and 3 of the justifications, which we will insert in the record at this point.

(The pages referred to follow:)

MIDDLE ATLANTIC DRAINAGE AREA

JUSTIFICATION OF ESTIMATE

1. Examinations and surveys

(*a*) Navigation studies: The amount of $43,500 is requested for prosecution of 4 studies on the Middle Atlantic waterways during fiscal year 1956. This amount will permit completion of 2 reports and progress on 2 others.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Delaware: Delaware River, Philadelphia to the sea, Delaware, New Jersey, and Pennsylvania—Channel dimensions	$47,000	0	$20,000	$27,000
New Jersey: Delaware River in vicinity of Camden	4,000	500	3,500	0
Virginia:				
James River	165,600	8,600	16,000	141,000
Princess Anne County	39,100	35,100	4,000	0
Total	255,700	44,200	43,500	168,000

(*b*) *Flood-control studies.*—The amount of $47,000 is requested for prosecution of three studies in the Middle Atlantic drainage area during fiscal year 1956. This amount will permit progress on three reports.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocation prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
New Jersey: Passaic River	$229,000	$158,700	$15,000	$55,300
Pennsylvania: Juniata River	166,000	130,200	22,000	13,800
Washington, D. C.: Anacostia River and Flats	25,000	0	10,000	15,000
Total	420,000	288,900	47,000	84,100

(*c*) *Beach erosion cooperative studies.*—The amount of $25,500 is requested for completion of 1 report and progress on 2 others along the Middle Atlantic shores.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocation prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
New Jersey:				
Barnegat Inlet to Cape May	$43,500	$26,000	$17,500	$0
Delaware Bay	6,000	0	3,000	3,000
Raritan Bay	10,000	0	5,000	5,000
Total	59,500	26,000	25,500	8,000
Grand total	735,200	359,100	116,000	260,100

Mr. MARSHALL. Do you have any comment to make on this, Colonel?

Colonel ALLEN. I have nothing to add to the general statement.

ADVANCE ENGINEERING AND DESIGN

Mr. MARSHALL. The next item is for "Advance engineering and design" for which a total of $375,000 is budgeted for this area. We will insert the statistical breakdown found on pages 4 and 5 of the justifications in the record at this point.

(The pages referred to follow:)

MIDDLE ATLANTIC

JUSTIFICATION OF ESTIMATE

Advance engineering and design

Funds in the amount of $375,000 will be applied to "Advance engineering and design" on 3 projects and restudy of 1 project in the Middle Atlantic drainage area. Two of those projects will be brought to the stage where construction can be initiated. The review of the project in the "deferred for restudy" category will be completed. The three projects on which planning will be accomplished have a total estimated cost of $214,800,000 and consists of 2 navigation projects and 1 flood-control project.

Project	Total estimated Federal cost	Allotments prior to fiscal year 1956	Tentative allocation, fiscal year 1956	Additional to complete after fiscal year 1956
Navigation projects:				
Delaware: Inland waterway from Delaware River to Chesapeake Bay (35-foot channel)	$104,000,000	----------	$210,000	[1] $103,790,000
New Jersey: Delaware River, Philadelphia to Trenton, N. J. and Pa. (40- and 35-foot channels)	95,100,000	----------	100,000	[1] 95,000,000
Total, navigation	199,100,000	----------	310,000	198,790,000
Flood-control projects: Pennsylvania: Kettle Creek Reservoir	15,700,000	----------	40,000	15,660,000
Multiple-purpose projects, including power: None.				
Reexamination of projects in "Deferred for restudy category": Pennsylvania: Tyrone	25,000	----------	25,000	----------
Grand total advance engineering and design	214,825,000	----------	375,000	214,450,000

[1] Sufficient planning funds will be available with the fiscal year 1956 request for the necessary preconstruction planning prior to requesting funds for construction.

Mr. MARSHALL. Colonel Allen, do you know of any opposition to any of these projects?

Colonel ALLEN. I am aware of none, sir, speaking of the two navigation projects which are included for advance planning.

Colonel STARBIRD. There is slight opposition to the Kettle Creek planning, sir. It is the normal opposition which we get in such projects in the early days. It is not so strong, nor anywhere near as strong, as that which we have had for certain other reservoirs in the area.

The project has the approval of the State, sir.

It is a Pennsylvania reservoir.

INLAND WATERWAY FROM DELAWARE RIVER TO CHESAPEAKE BAY

Mr. MARSHALL. The planning report for the inland waterway project states that assurances of local cooperation have not been received.

What local cooperation is required, and what is the up-to-date status of the assurances?

Colonel ALLEN. This project is in the first stages of planning, and this money which we are requesting this year is required in order to

proceed with the planning for the replacement of Summit Bridge, which is a bridge now located across the C. and D. Canal, or the Chesapeake and Delaware Canal.

This bridge is owned and operated by the United States. It was acquired by the United States when the Federal Government assumed ownership and operation of the canal in 1919.

It is a vertical lift, two-lane highway bridge, carrying traffic between the Delaware Memorial Bridge, and the Chesapeake Bay Bridge.

It is in poor condition, and steps should be taken to replace it. The authorization for its replacement as a four-lane, high-level bridge, was given in the River and Harbor Act of 1954, which authorized the improvement of the C. and D. Canal.

The funds in this budget will be devoted entirely to preparing plans for replacement of Summit Bridge, which has an estimated cost of around $6 million. If these funds are made available and planning proceeds as scheduled, we will be in position to request funds for the construction of this bridge in 1957.

With respect to your question on local cooperation, we have received nothing more than the assurances which are normal to the authorization of the project. In the early stages of planning, such assurances as are needed to initiate construction of the bridge in 1957 would be obtained.

Mr. MARSHALL. Can you furnish for the record the tonnage which moved through the channel during each of the last 10 years?

Colonel ALLEN. Yes, sir.

Mr. MARSHALL. Such information would be helpful to the committee.

(The information requested follows:)

Commercial statistics for inland waterway from Delaware Bay to Chesapeake Bay, Delaware and Maryland

Year	Tons	Year	Tons
1944	5,353,751	1949	6,361,682
1945	3,689,984	1950	7,298,188
1946	3,697,537	1951	8,635,865
1947	5,388,095	1952	6,748,483
1948	5,596,523	1953	8,506,176

DELAWARE RIVER, PHILADELPHIA TO TRENTON

Mr. MARSHALL. With respect to the project for improvements on the channel between Philadelphia and Trenton, what local cooperation is required?

Colonel ALLEN. The local cooperation required for the project, Philadelphia to Trenton, provides that local interests furnish, free of cost to the United States, all lands, easements, rights of way and spoil disposal areas necessary for construction of the project, and its subsequent maintenance; to hold forever the United States free from damages due to construction, and maintenance of the improvements and provision of suitable terminals, and transfer facilities by the local interests.

Mr. MARSHALL. What assurances of fulfillment have been received?

Colonel ALLEN. We have received none as of now.

Mr. MARSHALL. In calculating the benefits, did you consider the benefits to the transportation of freight to and from the new Fairless steel plant, and about how much would that amount to?

Colonel ALLEN. In the evaluation of the project, the benefits to the commerce to the Fairless steel plant were considered, and were an important part in justifying the project. The project was recommended to be 40 feet deep up to this plant. The exact amount of those benefits I do not have here.

Mr. MARSHALL. When was this project considered by the House Committee on Public Works?

Colonel ALLEN. It was considered last year prior to its inclusion, or prior to the passage of the 1954 omnibus bill.

Mr. MARSHALL. Did the House Committee on Public Works hold hearings on this item?

Colonel ALLEN. Not to my knowledge.

Mr. MARSHALL. As far as navigation is concerned, how much navigation is there on this river, above Trenton?

Colonel ALLEN. At the present time, with a project of 25 feet, there is on the order of 7.5 million tons in the reach between Philadelphia to Trenton.

Mr. MARSHALL. Is not the channel satisfactory insofar as taking care of the navigation above Trenton is concerned? The deepening of the channel would have no effect above there; would it?

Colonel ALLEN. It would permit the use of deeper and larger vessels.

Mr. MARSHALL. It would permit such use as far as Trenton?

Colonel ALLEN. Yes, sir.

BENEFIT TO FAIRLESS STEEL PLANT

Mr. MARSHALL. Such provision would be principally for the benefit of oceangoing ships delivering material to the Fairless Steel plant; would it not?

Colonel ALLEN. A good proportion of it would be to that plant.

Mr. MARSHALL. What contribution has the Fairless Steel plant made?

Colonel ALLEN. The project as authorized and as approved by the Congress calls for no contribution by United States Steel.

Mr. MARSHALL. It seems to me that I have seen some advertisements by United States Steel Corp. which have criticized the Congress for being too liberal in expending the taxpayers' money.

Mr. KIRWAN. What is the depth of the Delaware River beyond North Philadelphia?

Colonel ALLEN. It is authorized to 25 feet up to Trenton.

Mr. MARSHALL. Is it of that depth all the way to Trenton?

Colonel ALLEN. Yes, sir; it is 40 feet below that.

Mr. KIRWAN. From Philadelphia down to Delaware Bay it is 40 feet?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. It is 25 feet from there on up?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. However, the matter never was approved by any House committee. It was simply tacked on the bill later in the legislative process last year. I think it came in during the final week of the congressional session; is that correct?

Colonel ALLEN. I am not aware of any hearings which the House committee held on this.

I am advised that the House Public Works Committee considered it in executive session, but there were no public hearings.

Mr. KIRWAN. It came into the House cold, and was tacked onto a bill from the Senate. I think the amendment was put in over on the Senate side. I am not sure, but I think that is the way it came in.

Mr. Chairman, I have previously called to the attention of the colonel the situation in the Cleveland area, on the Cuyahoga River. They can get a 500-foot boat up that river, but in order to take care of the steel plants, we are going to take the bends out of the Cuyahoga River. There are three steel plants located in that area, the Republic Steel Corp., Jones & Laughlin, and the Republic Wire & Steel Co. They can get a 500-foot boat up there, but they cannot get a 600-foot boat up there. They will have to use smaller boats, which would not carry quite as much per trip if the project isn't carried out, but they are not satisfied to give a dime on the project.

I saw in the papers here some time ago where the United States Steel Corp. is thinking to split its stock 2 for 1. I read it in the paper. Surely, they are going to get the benefit of this 40-foot channel all the way up to Trenton, and no one else is going to get any benefit out of it. The 25-foot depth which they have in New Jersey will handle the ordinary traffic, but the provision of a 40-foot depth going up in there is for the benefit of one firm, and one firm only, the United States Steel Corp. If they are so prosperous they can split up their stock 2 to 1, surely they should make a little contribution and put a few dollars into this.

I think, Colonel, they should put a little money into this. The Fairless plant was built at a cost of $450 million if my memory serves me right, and special tax amortization was given to them by the Government. A gift like this is stretching it a little too far. I am not blaming the Army engineers, or you, Colonel, or any of your people at all.

Colonel ALLEN. I think the committee is aware of the language which is contained in the President's budget on this item. The President's budget states that he is willing to consider a supplemental appropriation for this project in a supplemental bill, providing local interests contribute $18 million toward the cost of the project.

ESTIMATED TOTAL COST OF THE PROJECT

Mr. MARSHALL. What is the total cost of the project?

Colonel ALLEN. The total cost of the project is now around $95,100,000.

Mr. KIRWAN. That is the total as of now, but we do not know what it will be when we have to consider the prices of everything going up. If we estimate that amount now, it is going to be $125 million before it is finished.

General Somerville appeared before a committee on which I served, and estimated the cost of the Pentagon Building at $24 million, but it cost $88 million. So, he missed his estimate on that by four times, and that happens on a lot of them.

That is why I say the local steel plant over there should make a contribution. I am not condemning the Army engineers, or anyone con-

nected with it, but if we are going to save the taxpayers a few dollars I would like to see a contribution by the steel plant. We have steel plants at Youngstown, and we had a project a short time ago on which the local interests did not come up with the money in the amount of $30 million, but one of the steel plants had to pay for the privilege in order to get some water. One of them was satisfied to contribute, but the other did not come through, and they did not get the project.

I cannot understand why the steel plants located near the city of Cleveland and those located down here in the vicinity of Trenton, the Fairless plant, do not put in a dime. The plant at Cleveland gets the river straightened for them, and the one here gets the river dredged.

Colonel ALLEN. There was a substantial contribution in the case of the Cuyahoga River, Mr. Kirwan, from the standpoint of the bridge relocation which the city undertook, and the lands and rights-of-way which they provided. They have relocated and rebuilt three highway bridges.

Mr. KIRWAN. I am not complaining about the city of Cleveland. They have done their part. I am referring to the three steel plants which will profit from the project but have not given a dime. That is what I am talking about. The city of Cleveland, I would say, has done its bit. They have relocated their own highway bridges and have done their part, but not the steel plants. The steel plants did not do a thing, and they will get the benefit. I do not think it is fair to the average businessman or to the average industry for us to spend their tax dollars to make a nice, clear waterway right to the door of a steel plant. Other parts of the Nation cannot get it.

Now, we come all the way to the Delaware. I might be wrong, but I think this steel plant received a tax amortization on the $450 million with which to build that plant.

That is why I am saying these things, just as a taxpayer, and not much of a taxpayer, at that. And do not think I am hollering about what taxes I am paying on a little homestead, but I think the steel plants on the Delaware River and up in Cleveland could do a better job of contributing in return for the aid which is going to be given to them.

BENEFIT-TO-COST RATIO

Mr. MARSHALL. What is the benefit-to-cost ratio of this project?

Colonel ALLEN. The benefit-to-cost ratio of the Delaware River project up to Trenton is 1.9 to 1.

Mr. MARSHALL. That involves this portion from Philadelphia to Trenton?

Colonel ALLEN. Yes, sir; that is the recently authorized 1954 modification.

Mr. MARSHALL. There are many projects, as I understand it, which are located all up and down the coast, where the benefit-to-cost ratio is higher than this. This is comparatively low; is it not?

PORTION OF PROJECT PROPOSED TO BE PLANNED IN 1956

Colonel ALLEN. It is a good ratio for a project of this magnitude. I would like to point out that the $100,000 in the budget this year would only initiate the planning on a bridge alteration, the Delair Bridge, which is obstructive, even to the traffic which now uses the Delaware-Trenton Waterway.

This $100,000 would permit the initiation of planning for relocation of that bridge. This $100,000 would not be used to make any plans on the dredging of the ultimate 40-foot project.

Mr. MARSHALL. Did I understand you correctly to say that this $100,000 which is being requested is all to be used for the relocation of this bridge?

Colonel ALLEN. It is all to be used for advanced engineering and design on the Delair Bridge; yes, sir.

Mr. MARSHALL. Regardless of whether the channel is dug to the 40-foot depth or not, this is still something which in your estimation should be done?

Colonel ALLEN. It is still something to serve the existing commerce on this waterway.

Mr. MARSHALL. Mr. Boland?

CONTRIBUTIONS BY PRIVATE INDUSTRY

Mr. BOLAND. This being my first experience with public works, has private industry ever contributed to any project of this kind?

Colonel ALLEN. Not to a project of this magnitude. There have been contributions authorized and accepted for projects where the primary beneficiary was one company. I can cite a few which were in the last bill, where it was determined that only one industry would benefit by a project, and the cost of the project in that instance was divided between the Federal Government and the beneficiary.

Mr. BOLAND. Is it the opinion of the Army engineers that the chief beneficiary as a result of this project will be the United States Steel Corp.?

Colonel ALLEN. The Chief of Engineer's report to the Congress recommended that the project be deepened to 35 feet, at Federal expense, since the benefits which would be derived from the commerce utilizing the 35-foot channel would be general in nature, and he went on to recognize that the benefits for the additional 5 feet would accrue to this one user, and recommended that the cost of this additional 5 feet be equally borne by the Federal Government and the United States Steel Corp. It was estimated that the additional 5-foot deepening, from 35 feet to 40 feet, would be on the order of $36 million.

Mr. BOLAND. Has the United States Steel Corp. expressed an interest in paying the $18 million?

Colonel ALLEN. Not to date, to my knowledge.

Mr. MARSHALL. What would be the approximate cost to build a channel at 35 feet, and to build one at 40 feet?

Colonel ALLEN. $55 million was the estimated cost at the time of the project report for the 35-foot channel, and the additional increment was $36 million. The additional 5 feet was estimated to cost $36 million.

DELAIR BRIDGE

Mr. TABER. Where will this bridge be located which you are discussing? Is it what you call the Delair Bridge?

Colonel ALLEN. It is the Delair Bridge which you will see in the lower left of your sketch just above Allegheny Avenue. It is a railroad bridge operated by the Pennsylvania Railroad.

Mr. TABER. That is the part of the project on which this $100,000 is involved?

Colonel ALLEN. That is correct, sir. That amount of money would be for planning that bridge, and preparing the design.

STATUS OF PLANS FOR CHANNEL DEEPENING

Mr. TABER. There is nothing else involved in the project except the $100,000? That is, there is nothing else pertaining to this project except this bridge, before us at the moment?

Colonel ALLEN. That is correct, planning funds for this bridge.

Mr. TABER. You are not planning on any deepening of the channel in the river, up to the Fairless setup; are you?

Colonel ALLEN. Not with the funds budgeted for this year.

Mr. TABER. There is not anything planned in connection with it, either?

Colonel ALLEN. No, sir.

NEED FOR BRIDGE

Mr. TABER. Did I understand you to say that this bridge is necessary, regardless of whether or not you deepened the river beyond the 25-feet which now exists?

Colonel ALLEN. Yes, sir. Modification of this bridge would be desirable to serve the commerce using the present depths.

Mr. TABER. What is the trouble with the bridge, as far as the navigation is concerned, which the river now carries?

Colonel ALLEN. It has narrow openings of 122 and 124 feet between the piers, and there have been occasions in the past where the bridge piers have been struck by vessels; that is, the vessels which now use the existing 25-foot depth.

Mr. TABER. You mean that there are some vessels using the 25-foot depth which are rather a quick fit for that particular job?

Colonel ALLEN. That is correct, sir.

Mr. TABER. Are there activities above the point of this bridge of a general variety for the entire territory; are the boats which would be hampered by the present bridge giving general service up in that neighborhood, or are they rather confined to the steel works?

Colonel ALLEN. No, sir; the commodities being carried over that waterway are petroleum, coal, sand and gravel, and the general types of commodities which serves a large segment of population and industry. There also is some steel or ore moving up to the Fairless plant on the existing project.

Mr. TABER. As a result of transshipment to barges, or something like that, or are there ships which come in there?

Colonel ALLEN. I think in some instances they offload, and discharge part of their cargo in the Philadelphia area, and then proceed up to the plant with a lighter ship.

Mr. TABER. Those ships are not particularly hampered by the bridge?

Colonel ALLEN. Well, they are all approximately the same dimensions as the tankers and the colliers which use the existing project.

Mr. TABER. They are bothered by the bridge?

Colonel ALLEN. Yes, sir; they are.

Mr. TABER. Do these tankers and colliers, and that sort of thing, go to the steel plant, or do they operate generally over all of the territory?

Colonel ALLEN. Their destination is in the general Trenton area; that is, for the coal and petroleum.

PERCENTAGE OF TRAFFIC TERMINATING AT STEEL PLANT

Mr. TABER. Would you be able to give us an idea of the percentage of traffic which passes under this bridge which would go to the steel plant?

Colonel ALLEN. Yes, sir; I can insert that.

Mr. TABER. You could not tell offhand?

Colonel ALLEN. No, sir; because I do not have those figures here, but I can readily get them from the commercial statistics.

(The following information was subsequently supplied:)

In calendar year 1953, 84,783 tons of iron ore and concentrates were transported over the waterway to the Fairless plant. Other commodities were also transported, however, the tonnages terminating at the Fairless plant cannot be readily determined.

Mr. TABER. How much will this bridge cost?

Colonel ALLEN. At the present stage of planning, which is right at the beginning, the estimated cost is about $11 million.

Mr. TABER. What percentage of the traffic would go to the steel plant, if the river were deepened to 40 feet?

Colonel ALLEN. Presumably, all of the iron ore that is now being transshipped in Philadelphia would be able to proceed to the Fairless plant without being offloaded.

Mr. TABER. Would you be able to give us that figure for the record?

Colonel ALLEN. The percentage?

Mr. TABER. You said you were able to give us the percentage which now passes under the bridge.

Colonel ALLEN. Yes, sir.

Mr. TABER. That is, a percentage which passes under the bridge, and which goes to the steel plant, but would you be able to give us the percentage of the traffic which would go to the steel plant with the deepening of the river to 40 feet?

Colonel ALLEN. I am going to ask Mr. Brennan to answer that question, Mr. Taber.

Mr. BRENNAN. I can give it to you now and correct the testimony; I might be 10 percent off.

Mr. TABER. Put it down in the record, and then correct it.

Mr. BRENNAN. The traffic, sir, that requires up to 35 feet which would go, if the channel were deepened, to the Fairless plant, is about 85 percent of the total traffic, and the traffic needing depths from 35 feet to 40 feet, 100 percent of that traffic would go to Fairless.

Mr. TABER. You mean 100 percent of the traffic which would come as a result of deepening the channel to 40 feet would go to Fairless?

Mr. BRENNAN. 100 percent of the traffic that would need from 35 feet to 40 feet would go to Fairless, but the traffic which needed up to 35 feet, about 85 percent of that would still go to Fairless.

Mr. TABER. The channel is now 25 feet; is it not?

Mr. BRENNAN. Yes, sir.

Mr. TABER. There is not 85 percent of the traffic going to Fairless now; is there?

Mr. BRENNAN. No, sir.

I do not have that figure.

Mr. TABER. That is the figure which you said you could put in the record?

Mr. BRENNAN. Yes, sir.

Mr. TABER. You can correct those figures so that you can be accurate as to what they are, and also give us an idea of what percentage the Fairless traffic at 40 feet would bear to the total traffic at 40 feet.

Mr. BRENNAN. Yes, sir.

Mr. TABER. I know you cannot give it offhand accurately, but you can furnish it after you check up.

Mr. BRENNAN. Yes, sir.

(The following information was subsequently supplied:)

TRAFFIC ON THE DELAWARE RIVER ABOVE THE DELAIR BRIDGE

The published statistics for calendar year 1953 for the Delaware River indicate that total traffic of 7,526,000 tons moved in the reach from Allegheny Avenue in Philadelphia to Trenton, N. J. Of this amount about 161,000 tons was ore, pig and scrap iron. Similar statistics are not available as yet for calendar year 1954. However, preliminary estimates by the Bureau of Census indicate that about 2,360,000 tons of ore and related products were imported from foreign sources by water to the Penn-Manor terminals in the vicinity of the Fairless steel works at Morrisville. If it is assumed that other commerce in 1954 would equal the 1953 reported tonnages, the percentage of ore to total traffic through the Delair Bridge would be about 25 percent. This percentage might be increased by domestic stone and coal shipments to the plant by water by as much as an additional 5 percent.

For a 35-foot depth about 80 percent of the incremental traffic using drafts greater than 25 feet will be transported to and from Morrisville according to estimates prepared for the report in House Document No. 358, 83d Congress, 2d session.

Similarly, for the proposed 40-foot depth, it appears that all of the incremental traffic using drafts greater than 35 feet will be transported to and from the Morrisville plant.

Estimates of total traffic over the proposed 40-foot waterway with full operation of the Fairless works are not readily available. However, using the 1953 existing traffic and the proposed steel-plant traffic as estimated in House Document 358, it appears that about 62 percent of the traffic will be for the steel plant. This estimate does not include any additional prospective traffic for Trenton terminals as estimated in the document. Such tonnages could decrease the total percentage by as much as 5 percent.

DELAWARE-CHESAPEAKE INLAND WATERWAY

Mr. TABER. Do you have a depth of 40 feet into Philadelphia now?

Colonel ALLEN. Yes, sir.

Mr. TABER. What is this Delaware-Chesapeake inland waterway project estimated to cost?

Colonel ALLEN. The total cost of the project authorized in the last bill is $104 million, but the only item that we are requesting planning funds for in this budget is for a bridge to be constructed over the C. & D. Canal, a bridge which the United States owns, and which we are obligated to maintain in order to handle the highway traffic.

Mr. TABER. How deep is that canal under the bridge?

Colonel ALLEN. It was authorized in the last act——

Mr. TABER. Never mind what was authorized. How deep is it?

Colonel ALLEN. It is now 27 feet.

Mr. TABER. What is the reason for the new bridge?

Colonel ALLEN. The present bridge is not adequate. There is a bridge there now, a two-lane highway bridge, which is in a bad state of maintenance. It is an old bridge, and the piers have begun to settle. We have had two accidents in prior years on two other bridges where ships collided with the piers, and completely demolished the bridges, one during the war, and one prior to the war.

We desire to get this bridge rebuilt, not from the standpoint of navigation entirely, but in order to widen the piers so that they will not be damaged and destroyed by passing vessels and, also, to provide four-lane traffic to serve the highways which are being built by the States, and which feed into this Summit Bridge.

Mr. TABER. How much money did you say was requested for this?

Colonel ALLEN. The estimated cost of the Summit Bridge over the C. & D. Canal bridge is $6 million.

Mr. TABER. Just like the other?

Colonel ALLEN. Yes, sir.

Mr. TABER. It is the same type of bridge?

Colonel ALLEN. The Delair bridge is a railroad bridge; the Summit bridge is a highway bridge.

Mr. TABER. And about the same size?

Colonel ALLEN. Yes, sir. It is a relatively narrow channel; several hundred feet.

Mr. TABER. That is a main channel from the Chesapeake to the Delaware?

Colonel ALLEN. That is correct, sir.

Mr. TABER. There is no special use of that which would attract attention?

Colonel ALLEN. No. The commerce using it is of a general nature. It is not limited to one commodity or one user. The planning funds here are strictly for the bridge. We propose to do no planning with respect to the rest of the project at this time.

Mr. TABER. That is true of both those jobs?

Colonel ALLEN. That is correct.

Mr. TABER. What is the traffic on the C. & D. Canal?

Colonel ALLEN. In 1952 the traffic was 6.7 million tons. It had a total of 15,000 vessel passages during the year.

Mr. TABER. 15,000?

Colonel ALLEN. 15,000 vessel passages.

Mr. TABER. That means a lot of them were small craft?

Colonel ALLEN. Yes. That includes all types of vessels.

Mr. TABER. A good many of them probably were motor launches?

Colonel ALLEN. To give you an idea of the order, 11,000 had drafts of 12 feet or less, so about 4,000 had drafts of 13 feet and above.

Mr. TABER. The Delaware has traffic a good deal heavier than that, does it not?

Colonel ALLEN. The main Delaware; yes, sir.

Mr. TABER. Up as far as Philadelphia?

Colonel ALLEN. That has considerably more than that.

DELAIR BRIDGE

Mr. TABER. For this bridge job in Philadelphia, Delair, what railroad is that?

Colonel ALLEN. The Pennsylvania Railroad, sir.

Mr. TABER. That is the line that goes to Atlantic City?

Colonel ALLEN. That is correct.

Mr. TABER. That is not the New York line?

Colonel ALLEN. No, sir.

Mr. TABER. The 25-foot channel begins at about the point of this bridge?

Colonel ALLEN. Just below.

Mr. TABER. I see where it is marked here, where the "O" is above the "Mile."

Colonel ALLEN. Yes, sir; just at Allegheny Avenue. If you look directly above the "O" you see Allegheny Avenue. That is the beginning of this project.

Mr. TABER. I think that is all I have at this time.

Mr. MARSHALL. The committee will stand adjourned. We will meet at 10 o'clock tomorrow morning.

WEDNESDAY, APRIL 27, 1955.

CONSTRUCTION

Mr. MARSHALL. The committee will come to order.

DELAWARE RIVER PROJECT, PHILADELPHIA TO THE SEA

Mr. MARSHALL. The first project which we have for consideration is the Delaware River project, Philadelphia to the sea.

We will insert pages 7, 8, and 9 of the justifications in the record at this point.

(The pages referred to follow:)

DELAWARE RIVER, PA., N. J., AND DEL., PHILADELPHIA TO THE SEA (RESUMPTION)

Location.—Anchorage in the Delaware River, above the mouth of the Schuylkill River.

Authorization.—1945 River and Harbor Act.

Benefit-cost ratio.—Not evaluated. Authorized on basis of convenience, economy, and safety to navigation.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$3,150,000	
Estimated local cash contributions		
Estimated project cost	3,150,000	
Appropriations to June 30, 1954	1,540,000	
Appropriations for fiscal year 1955		
Appropriations to date	1,540,000	49
Appropriations requested for fiscal year 1956	1,000,000	81
Balance to complete after fiscal year 1956	600,000	

PHYSICAL DATA

Anchorages:

Mantua Creek: 37 feet deep, 1,400 feet wide, and 11,600 feet long.

Marcus Hook: 37 feet deep, 1,400 feet wide, and 10,500 feet long.

STATUS (JANUARY 1, 1955)

Anchorages:

Mantua Creek: Enlargement and deepening to 37 feet; not started.
Marcus Hook: Completed.

COMPLETION SCHEDULE

Anchorages:

Mantua Creek, 37 feet deep: June 1957.

JUSTIFICATION

Improvement of the navigation facilities of the Delaware River has been one of the principal factors in the industrial and economic growth of the Delaware Valley, and has provided a modern port for the service of commerce and trade with all parts of the world. The Mantua Creek anchorage is used by ships, particularly loaded oil tankers, awaiting berthing space at the numerous refineries and unloading wharves along the Delaware and Schuylkill Rivers. There is no anchorage space in the Schuylkill River. Mantua Creek anchorage was dredged in 1949 to a depth of 35 feet, a width of 1,000 feet and an average length of 12,300 feet. Deep draft supertankers recently put into operation require at least 37-foot depth and a minimum of 1,800 feet to swing around at anchor on the change of tide. When held at anchor, these vessels swing into the channel, endangering other vessels passing the location. Completion of the anchorage is necessary not only in the interest of safety but also to provide adequate anchorage space for the increasing number of larger ships requiring such accommodations. The rapid increase in vessel traffic on the Delaware River requires prompt provision of the authorized anchorage.

Fiscal year 1956.—The requested amount of $1 million will be applied to initiation of dredging of Mantua Creek anchorage. The early completion of this anchorage is necessary to provide adequate anchorage facilities for existing commerce, particularly large oil tankers awaiting berths at the nearby refineries.

Completed modifications.—Channel 35 feet deep from Allegheny Avenue, Philadelphia, to Delaware Bay; anchorages 35 feet deep at Port Richmond and Mantua Creek; an anchorage 30 feet deep at Gloucester, N. J.; extending the 1,000-foot width in Philadelphia Harbor to Horseshoe Bend; and an anchorage 35 feet deep at Marcus Hook. The cost of this completed work is $17,834,000.

Remaining authorized modifications.—Modifications in the 1938 River and Harbor Act provide for deepening the channel from the naval base to Delaware Bay to 40 feet and between Philadelphia-Camden Bridge and the naval base to 37 feet. The 40-foot section has been completed at a cost of $9,087,000. Work has not been initiated on the 37-foot section, estimated to cost $2,020,000.

Further modifications in the 1945 River and Harbor Act provide for deepening to 37 feet the channel between Allegheny Avenue, Philadelphia, Pa., and the Philadelphia-Camden Bridge, and for a 37-foot depth in Port Richmond anchorage. Work has not been initiated on these modifications, which is estimated to cost $2,100,000.

A further modification in the 1954 River and Harbor Act provides for a channel 42 feet deep in rock and 40 feet deep in other material and 400 feet wide from Allegheny Avenue to the naval base, widening to 500 feet at Horshoe Bend. Work on this modification has not been initiated, and is estimated to cost $4,830,000.

The total cost of completed work under these modifications is $9,087,000, and the total cost of work not initiated under these modifications is $8,950,000, making a total of $18,037,000.

Mr. MARSHALL. Colonel Allen, we would be glad to hear from you on this project.

Colonel ALLEN. This project is an early modification of the project, Philadelphia to the sea. It was not contained in the authorization which we were discussing yesterday, on the area from Philadelphia to Trenton. The project, Philadelphia to the sea, is an old authorization and this Mantua Creek anchorage was authorized in the 1945 River and Harbor Act.

MANTUA CREEK ANCHORAGE

This is to provide an enlargement of existing anchorage at Mantua Creek, both in depth and in lateral dimensions, in order to more safely accommodate the supertankers and the large vessels using the Philadelphia Waterway.

This project, if begun this year, with an appropriation of $1 million, may be completed next year, with an estimated $610,000. It would provide, as I mentioned, greater dimensions in the existing Mantua Creek anchorage. This anchorage is used by vessels awaiting berthing space at the refinery terminals. Some of the vessels require more than the existing length and width of the existing anchorage in order to safely anchor and swing with the tide.

The existing anchorage is inadequate in size, and causes them at times to swing into the channel. You will notice that the benefit-to-cost ratio is, as some which we have discussed previously, not evaluated. It is authorized strictly on the basis of safety and convenience to the existing navigation.

In 1953 there were some 58 million tons of commerce using this Philadelphia-to-the-sea waterway. About 75 percent of that commerce was in petroleum products and it is the super tankers and the larger tankers which would be the primary users of this Mantua Creek anchorage.

Mr. MARSHALL. Do you have any record of the number of accidents which have been caused because of having inadequate facilities?

Colonel ALLEN. No, sir; we have no record of accidents. It is strictly a question of safety and the adoption of safety practices, and the awareness of the pilots that there is a hazard existing here in this Mantua Creek anchorage. I have no record of any accidents. However, it is obvious that any accident to a loaded tanker right at the Philadelphia waterfront, would be a disaster of great proportions.

Mr. MARSHALL. What percentage of completion do we have on this particular project at the moment?

Colonel ALLEN. This project, the Mantua Creek anchorage, is about 49 percent complete. It was last dredged in 1949, when it was taken to 1,000 feet wide, and 35 feet deep.

This would take it to 37 feet deep and increase the width to 1,400 feet. The funds appropriated this year would bring it to 81 percent of completion, and it could be brought to 100 percent of completion in the following year.

Mr. KIRWAN. Where does the Schuylkill River enter the Delaware? Does it enter above the Camden-Philadelphia Bridge?

Colonel ALLEN. It enters right at the anchorage, sir.

Mr. KIRWAN. I see; it is right at the anchorage, but where is that? Is it above the Camden-Philadelphia Bridge?

Colonel ALLEN. It is below the bridge, sir.

Mr. KIRWAN. It is below, and toward Washington?

Colonel ALLEN. That is correct, sir.

Mr. KIRWAN. I see you have no local contribution here. When you say you have no local contribution, does that mean you are going to dredge around the piers, and other facilities there?

Colonel ALLEN. No, sir; this is strictly an anchorage area. There is no berthing space in the center of the stream.

Mr. KIRWAN. This is a project which would permit the using ships to turn around?

Colonel ALLEN. Yes, sir; so that they may anchor awaiting their turns at the terminals.

Mr. KIRWAN. It is more of a safety project?

Colonel ALLEN. Yes, sir.

Mr. TABER. What percentage of this traffic to Philadelphia would you say was oil and oil products?

Colonel ALLEN. Approximately 75 percent of the 58 million tons is in petroleum and petroleum products.

Mr. TABER. Is there any local contribution on this at all?

Colonel ALLEN. There is no local contribution on this project.

Mr. TABER. Should there not be?

Colonel ALLEN. No, sir. The benefits that are derived from a project of this type are considered to be general in nature, and not localized.

Mr. TABER. Is this project located on the Schuylkill River, or on the Delaware River?

Colonel ALLEN. It is on the Delaware River, sir, just opposite the mouth of the Schuylkill.

Mr. TABER. That is all.

NEW YORK AND NEW JERSEY CHANNELS

Mr. MARSHALL. The next project is New York and New Jersey Channels, and we will insert pages 13, 14, and 15 of the justifications into the record at this point.

(The pages referred to follow:)

NEW YORK AND NEW JERSEY CHANNELS, N. Y. AND N. J. (35-FOOT CHANNEL) (CONTINUING)

Location.—These channels, about 30.8 miles in length, extend from lower New York Bay around the west side of Staten Island to upper New York Bay, and are located approximately along the boundary line between the States of New York and New Jersey.

Authorization.—1935 and 1950 River and Harbor Acts.

Benefit-cost ratio.—1935 act not evaluated; 1950 act 1.38 to 1.00.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$58,000,000	
Estimated local cash contributions	0	
Estimated project cost	58,000,000	
Appropriations to June 30, 1954	35,955,000	
Appropriations for fiscal year 1955	2,000,000	
Appropriations to date	37,955,000	65
Appropriations requested for fiscal year 1956	3,000,000	70
Balance to complete after fiscal year 1956	17,045,000	

PHYSICAL DATA

Channels: Lower New York Bay through Raritan Bay and Arthur Kill to vicinity of Smith Creek, 35 feet deep and 600 feet wide, with widening at bends to 800 feet, 15.9 miles long; in Arthur Kill from vicinity of Smith Creek to

Piles Creek, 35 feet deep, 500 feet wide with widening at bends, 6.5 miles long; in Arthur Kill and Kill Van Kull from vicinity of Piles Creek to Upper New York Bay, 35 feet deep, 500 to 800 feet wide, 8.4 miles long. Bend in Arthur Kill at B. & O. Railroad bridge widened by 200 feet to depth of 35 feet.

Cut off: At junction with main ship canal to a depth of 30 feet.

Anchorage: Perth Amboy, deepen 33-foot anchorage to 37 feet and provide area 25 feet deep. Overall area 1,800 feet wide by 5,000 feet long; Sandy Hook, 38 feet deep, 1,600 feet wide by 6,000 feet long.

STATUS (JANUARY 1, 1954)

Channel:
Lower New York Bay to vicinity of Smith Creek: Complete In Arthur Kill from Smith Creek to Piles Creek: 7 percent complete.
In Arthur Kill and Kill Van Kull to Upper New York Bay: Complete.
Anchorage, Perth Amboy: Complete.
Anchorage, Sandy Hook: Not started.
Cutoff at junction with main ship canal: Not started.
Widen bend at B. & O. Railroad bridge: Not started.

COMPLETION SCHEDULE

In Arthur Kill from Smith Creek to Piles Creek: December 1959.
Anchorage, Sandy Hook: June 1959.
Cutoff at junction with main ship canal: September 1956.
Widen bend at B. & O. Railroad bridge: May 1958.

JUSTIFICATION

These channels, as part of the port of New York Channel facilities, serve one of the most highly industrialized areas in the United States for storage, refining, and distribution of petroleum products in addition to large chemical plants; railroad, lumber, and coal terminals; public service companies and other industrial and commercial plants. It also serves the world ports through its existing deep-draft ship lanes and ports of the Great Lakes and St. Lawrence River through the Hudson River. Continuation of further improvement under the project to provide wider and deeper channels is essential in order to accommodate the constantly expanding volume of traffic handled in larger and deeper draft vessels.

During 1953 the foreign and domestic commerce originating from or consigned to points on this project amounted to some 73 million tons or 52 percent of the total commerce of the port of New York. In addition, 16 million tons of commerce originating elsewhere than from the bordering uplands traveled this waterway in 1953 en route to other parts of the harbor of New York, or a total of 89 million tons of commerce traveled this important maritime artery in 1 year. Approximately 25 percent of the total commerce for New York and New Jersey channels is handled in the 6.5 mile reach of the middle section of Arthur Kill between Sewaren and Piles Creek which is essentially all that remains to complete the entire 35-foot main channel between Upper and Lower New York Bays. By completing this link the full economic benefits anticipated from the project will be realized and the full capacity of these channels will be available in the event of a national emergency. Tankers presently using the waterway have loaded drafts up to 34 feet. The major difficulty affecting the operation of deep-draft vessels on this waterway is insufficient depth and width of channel in the middle section of Arthur Kill since this portion of the waterway cannot accommodate the larger and more efficient vessels now in use on its northerly and southerly ends. Completion of the improvement will also provide a connecting link of equal depth in one of the most important waterways in the port of New York, and will result in widespread national benefits.

Fiscal year 1956.—The requested amount of $3 million will be applied to:

Completion of dredging and rock removal, under continuing contract, in vicinity of Rahway River, area 16	$1,040,000
Completion of dredging, Grasselli to Pralls Island, area 2	910,000
Initiation of dredging and rock removal, vicinity of Lakes Island, area 9	770,000
Engineering and design	30,000
Supervision and administration	250,000
Total	3,000,000

In the present 30-foot section of Arthur Kill, the handling of deep-draft ships can be accomplished only with some hazard or by employing uneconomic methods such as carrying partial loads, navigating only on high tides during the daytime, or lightering vessels before proceeding to terminals. All those alternatives are inefficient and costly and result in appreciable loss. It is essential that a through depth of 35 feet be provided at the earliest date for the safe and efficient movement of the millions of tons of waterborne commerce transported on this important maritime artery.

Work areas have been selected to afford the best possible channel lanes to navigation interests during dredging operations consistent with existing depths. The sequence has been arranged to take advantage of available dredging equipment in this area, to permit traffic to pass without undue delays or hazards during dredging operations, and to provide the deepest available water where possible.

Completed modifications, New York and New Jersey Channels.—Work completed consists of an anchorage to a depth of 33 feet south of Perth Amboy authorized by the act of September 6, 1933. The cost of this completed work is $807,000.

ARTHUR KILL SECTION

Mr. MARSHALL. Colonel Allen, will you please tell us about this project?

Colonel ALLEN. The New York-New Jersey Channels including the Arthur Kill section is a part of the port of New York.

At the northern end of the Arthur Kill section, we have 35 feet in depth. At the southern end we have 35 feet in depth. The control in the 6.5 miles in between the two feeders to the north and the south is approximately 30 feet.

This project has as its purpose the deepening of this 6.5-mile section of Arthur Kill to an authorized project depth of 35 feet.

The project has been under way for several years. For the current fiscal year $2 million was appropriated for it, and we are requesting $3 million for fiscal year 1956, which will bring the project to 70 percent of completion.

In 1953, the Arthur Kill section carried some 73 million tons of commerce and that is a substantial portion, about 52 percent, of the total commerce of the port of New York.

The work here consists largely from now on of rock removal. Most of the overburden has been stripped, and the work is being let in partial contracts, as you see, on your sketch.

The benefit-to-cost ratio for this particular project is 1.4.

Mr. MARSHALL. I notice it is not planned to finish this project until fiscal year 1960.

The work now being done and the work budgeted for fiscal year 1956, will it be of economic value in itself, or is it dependent upon work to be completed in later years?

Colonel ALLEN. In order to realize the full benefits from this improvement, it would be necessary to complete the project. What we are doing is working on small segments and improving them as the probings and borings are made, and letting them in small contracts, rather than one large continuing contract for the work, but it will be necessary in order to realize the full benefits from the project, that the project be completed.

Mr. KIRWAN. I note you stated that the other part of the project, the removal of the overburden, had been completed, and the purpose of this request is to take out the rock?

Colonel ALLEN. Removal of the overburden has been mostly completed, sir.

Mr. KIRWAN. You are now down to the rock?

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. Does that have a bearing upon the question of why you only let contracts for certain portions of it?

Colonel ALLEN. No, sir; we have to work on this piecemeal because of the necessity of maintaining traffic through the waterway. We have to select our working areas so that traffic can be maintained, and will not be interfered with by the dredge boats and the drill boats which will be in the waterway. That is why we have divided a portion of the channel in half, as you have noticed.

Mr. TABER. The portion which is marked in black on this map is now down to 30 feet?

Colonel ALLEN. To 35 feet, sir.

Mr. TABER. Thirty-five feet?

Colonel ALLEN. Yes, sir.

Mr. TABER. What is the idea of dredging to 30 feet in the cutoff from the channel?

Sandy Hook is shown on the bottom of that map; is it not?

Colonel ALLEN. You are speaking of the brown triangle down in the area near Sandy Hook?

Mr. TABER. Yes.

Colonel ALLEN. That is to accommodate the shallow-draft vessels that come down the main ship channel, and turn into the deeper channel.

Mr. TABER. That is all.

NORFOLK HARBOR, VA.—CRANEY ISLAND DISPOSAL AREA

Mr. MARSHALL. The next project is the disposal area at Norfolk Harbor, and we will insert at this point in the record pages 21, 22, and 23 of the justifications.

(The pages referred to follow:)

NORFOLK HARBOR, VA. (CRANEY ISLAND DISPOSAL AREA) (CONTINUING)

Location.—Norfolk Harbor is located at Norfolk, Va., 30 miles westerly from the entrance to Chesapeake Bay at Cape Henry. The Craney Island disposal area is located adjacent to and north of Craney Island in Norfolk Harbor.

Authorization.—1946 River and Harbor Act.

Benefit-cost ratio.—2.24 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$8,370,000	
Estimated local cash contributions	0	
Estimated project cost	8,370,000	
Appropriation to June 30, 1954	796,000	
Appropriation for fiscal year 1955	3,000,000	
Appropriation to date	3,796,000	45
Appropriation requested for fiscal year 1956	700,000	54
Balance to complete after fiscal year 1956	3,874,000	

PHYSICAL DATA

Disposal area: Disposal area of about 2,500 acres enclosed by stone-faced levees, rehandling basin 1,100 by 2,250 by 46 feet deep with approach and exit channels to Norfolk Harbor 31 feet deep, sluiceways; pipeline trestle; range markers; navigation aids; and access road.

Rehandling plant: Rehandling plant consisting of a dredge and necessary attendant plant, and appurtenant facilities.

STATUS (JANUARY 1, 1955)

Land acquisition completed.

Contract for stone-faced levees, sluiceways, and access road awarded June 28, 1954.

Rehandling basin, pipeline trestle, range markers, and navigation aids: Not started.

Rehandling plant: Not started.

COMPLETION SCHEDULE

Stone-faced levees, sluiceways, and access road: September 1956.

Rehandling basin, pipeline trestle, range markers, and navigation aids: March 1957.

Rehandling plant: June 1960.

JUSTIFICATION

This project is urgently needed to receive materials dredged by bucket and hopper methods in the Hampton Roads area, including the ports of Norfolk, Portsmouth, Newport News, and Hampton, Va. The total average annual dredging is about 4,300,000 cubic yards, of which 3,800,000 cubic yards are done by the Government and 500,000 cubic yards by private concerns. For approximately 13 years, or since disposal was discontinued in lower Chesapeake Bay, the material has been deposited in the deep waters of Hampton Roads, which are largely occupied by naval anchorages. The areas have now been filled to capacity. Further use thereof will involve potential oyster damages and the possibility of claims from local oyster interests to the extent of several million dollars, as evidenced by letters of protest from local oyster interests and subsequent conferences regarding continued use of the dumping ground in Hampton Roads. It is alleged that sediment from the dumping resulted in the killing of oysters and rendering of hundreds of acres of oyster ground unfit for use in the cultivation of oysters. For the above reason, a public notice was issued on February 25, 1953, to the effect that all future permits for the disposal of dredged material in open water will require that the material be deposited at sea off Cape Henry. The effective date for cessation of use of the Hampton Roads area was established as September 7, 1953. Pending completion of the project, it will be necessary to transport large quantities of dredged material to the Atlantic Ocean, which will hamper the maintenance of these important channels and greatly increase the cost of the maintenance work.

The project is self-liquidating in that the sum of (*a*) the annual saving to the Federal Government resulting from cheaper dredging costs to the river and harbor projects under the jurisdiction of the Corps of Engineers in the Hampton Roads area, and (*b*) the annual charge to be paid by other users (such as Federal agencies and private interests) will cover the fixed and operating costs.

Fiscal year 1956.—The requested amount of $700,000 should be made available for an orderly and economical prosecution of the work and an early realization of the benefits inherent in the completed project. The $700,000 will be applied as follows:

Continue construction of stone-faced levees, sluiceways, and access road under a continuing contract	$628,000
Engineering and design	3,000
Supervision and administration	69,000
Total	700,000

Completed modifications, Norfolk Harbor, Va.—Work completed consists of a 750-foot width of the main 40-foot channel in Elizabeth River from Hampton Roads, and various extensions in southern, eastern, and western branches, and Scotts Creek, with supplemental anchorages and turning basins. The cost of this completed work is $6,532,000.

Remaining authorized modifications, Norfolk Harbor, Va.—Uncompleted modifications consists of widening Norfolk Harbor 40-foot channel to 1,500 feet plus 3 anchorages adjacent to Craney Island, 38, 35, and 20 feet deep; and completion of a 35-foot channel in the southern branch of Elizabeth River. The 35-foot channel in the southern branch, with a total estimated cost of $1,272,000 is complete except for work at the Belt Line railroad bridge having an estimated cost of $67,000. No work has been accomplished on widening the 40-foot channel nor on the Craney Island anchorages which were authorized by the 1954 River and Harbor Act and are estimated to cost $4,860,000.

Mr. MARSHALL. We would be glad to hear your comments on this project, Colonel, and we would especially like to have you direct some comments to the question about the extent of possible claims against the United States by the oyster growers.

Colonel ALLEN. The project at Craney Island is a continuing project, having had its first major appropriation in fiscal year 1954. It was authorized in 1946 as a means of reducing costs on maintenance dredging in the Hampton Roads-Norfolk Harbor area.

Essentially, the project provides for the construction of an earth dike, constructed in about 12 feet of water. The top of this dike will be at an elevation 8 feet above mean low water. The enclosure thus formed by the construction will cover approximately 2,500 acres, and will have a capacity of about 125 million cubic yards, sufficient to handle maintenance dredging requirements in this area for about 25 years.

Upon completion of the project, maintenance dredging materials will be deposited within it, rather than carried to sea and deposited off Cape Henry, as is now the case.

There are no areas within Hampton Roads where maintenance materials can be dumped where they will not interfere with the existing channels. There has been a significant change in this project since reporting on it last year.

The original plan contemplated dumping of the material in the rehandling basin by the dredging plant which removed it from the channel and then repumping it by a Government plant, to be designed for that job, into the disposal area.

So, there would be two handlings, one from the channel into the rehandling basin, and then a hydraulic dredge, Government-owned, for rehandling it then into the disposal area.

There were funds included in the request of last year to begin construction of this Government dredge which would rehandle it into the basin. During the year, the plan has been further evaluated, and restudied, and it was decided now to postpone for several years the construction of this Government plant, and give a trial period of advertising for this rehandling and to have it handled by regular construction contractors, or dredging contractors.

After this levee is constructed, and the maintenance operations are begun, it is proposed to give this a trial period to see whether or not that can be done properly, and the schedule can be maintained by dredging contractors. If that proves satisfactory, then it will be unnecessary to proceed with the construction of the Government dredge for this purpose, and the contractors' plants will then be used, if that scheme proves satisfactory.

OYSTER LEASES

Mr. Chairman, you commented on the oyster leases. One of the requirements of local cooperation was that local interests extinguish oyster leases in this area, and to my knowledge, there has been no difficulty with the question of oyster leases. They have been extinguished by the State, and notification of that passed on to the corps. I am not aware of any recent controversy with respect to oyster damage in this area.

Mr. MARSHALL. There are no claims pending at the present time?

Colonel ALLEN. Not to my knowledge, sir.

Mr. MARSHALL. I wonder if you would clear up just what the status is of local cooperation.

Colonel ALLEN. The planning report states, getting back to the prior question, that oyster growers have been compensated for damages to crops in production. We undertook to compensate them for the crops which were in production on this acreage which we were taking.

As I mentioned before, the Commonwealth of Virginia has conveyed the title to the submerged land to be occupied by the disposal areas, terminated oyster leases, and released the United States from all claims for damages.

Mr. MARSHALL. In the planning report for Norfolk Harbor, on page 10, paragraph 2, there is stated the following:

> The Commonwealth of Virginia will convey to the United States by appropriate legislation or otherwise title to the submerged lands permanently occupied by the disposal area, and terminate all existing oyster leases in effect within the limits of the disposal area, it being understood that the United States will compensate private oyster growers for crops in production on the submerged land at the time of the occupancy by the United States.

Colonel ALLEN. Yes, sir; and that title, as I mentioned, has been conveyed to the United States, and the crops in production have been compensated for by the United States.

Mr. MARSHALL. How much has the United States paid out on this particular item?

Colonel ALLEN. I think there is a small figure carried in here for that. That figure is approximately $3,000, sir.

STATEN ISLAND BRIDGE

Mr. MARSHALL. The next project is the Staten Island bridge. We shall place pages 27 and 28 of the justifications into the record at this point.

(The pages referred to follow:)

STATEN ISLAND RAPID TRANSIT RAILWAY COMPANY BRIDGE, NEW YORK AND NEW JERSEY (NEW)

Location.—This bridge crosses Arthur Kill, a portion of the New York and New Jersey channels navigation project, and connects Elizabeth, N. J., with Staten Island, N. Y.

Authorization.—June 21, 1940 act (Truman-Hobbs Act).

Benefit-cost ratio.—Not applicable.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$7,654,000	
Estimated local cost	1,055,000	
Estimated project cost	8,709,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	1,000,000	13
Balance to complete after fiscal year 1956	6,654,000	

PHYSICAL DATA

Bridge: Type—vertical lift.

Clearance: vertical, 31 feet above mean high water closed, 135 feet above mean high water raised, horizontal, 500 feet.

STATUS (JANUARY 1, 1955)

Not started.

COMPLETION SCHEDULE

April 1959.

JUSTIFICATION

The continued existence of the present bridge constitutes a threat to navigation on this waterway. The existing bridge crossing Arthur Kill is old, its limited clearance and its location on a bend in the channel make for very hazardous operation of the very large present-day tankers transiting the channels. During the past 21 years, a total of approximately 100 accidents are reported to have occurred at the bridge. Its possible destruction by collision with one of these tankers would close the waterway until its removal could be accomplished. The threat of fire in the event of such a collision by a loaded tanker is real and would endanger one of the world's largest concentration of petroleum refining and storage centers in the world. In addition, destruction of the bridge would close off the major transportation route between the mainland and Staten Island, a borough of the city of New York. The bridge is the only rail link between the United States Army Port of Embarkation, Staten Island Terminal, and the mainland. With the altered bridge providing an opening of 500 feet, the bridge will be fully adequate for traffic on the waterway, and the hazards to navigation and the danger to industry and transportation service removed.

New work dredging presently in progress in Arthur Kill will result in provision of increased channel dimensions necessitated by the increasing size of petroleum tankers transiting the waterway. Failure to accomplish the bridge replacement as proposed will aggravate and prolong the increasingly critical condition presented by the inadequacy of the present structure.

Fiscal year 1956.—Initiate the inital phase of the bridge alteration, involving work on substructures for the bridge and approaches. To provide for an orderly and economical rate of construction with completion in fiscal year 1959 as scheduled, $1 million in Federal funds will be required in fiscal year 1956.

Mr. MARSHALL. Colonel Allen, will you please give us a brief statement on this project?

Colonel ALLEN. The Staten Island Rapid Transit Railroad bridge crosses the Arthur Kill which we have previously discussed, under the New York-New Jersey channels.

An order to alter this bridge was given to the bridge owner in 1949, it having been found obstructive to navigation by reason of restricted clearances.

The machinery for working out a project of this sort is carried in the Truman-Hobbs Act of 1940, which provides that the Secretary of the Army, having found a bridge obstructive to navigation, shall issue an order to the railroad bridge owner to alter.

That act also carries machinery for allocating costs, between the bridge owner, and the Federal Government.

This is one of the bridges on which an order has been issued. The roalroad company is prepared to proceed on this work, on the basis of a continuing contract, and we are requesting $1 million in 1956 in order that we may join with the railroad in accomplishing the order of the Secretary of the Army to remove the existing bridge, and replace it with a bridge of satisfactory clearances.

The cost to the railroad for this bridge is somewhat in excess of $1 million. The bridge is owned by the Baltimore & Ohio Railroad.

Mr. MARSHALL. The railroad has agreed to its share?

Colonel ALLEN. Yes, sir.

Mr. MARSHALL. Has the railroad also agreed to proceed with the construction on an annual appropriation basis?

Colonel ALLEN. They have agreed to that, sir.

Mr. MARSHALL. Do you anticipate that there will be any problems involved here?

Colonel ALLEN. We anticipate no difficulties, sir.

Mr. KIRWAN. How old is the bridge?

Colonel ALLEN. The bridge was constructed in 1888.

Mr. KIRWAN. What is the amount of tonnage which they are crossing that bridge with at this time?

Colonel ALLEN. The railroad tonnage?

Mr. KIRWAN. Yes, sir.

Colonel ALLEN. I do not have that figure. This bridge is maintained in the open position because there is more channel traffic than there is railroad traffic, and it is closed only for the period of time that the railroad requires it. I have no information as to the railroad tonnage over this bridge.

Mr. MARSHALL. You do not have those figures?

Colonel ALLEN. No, sir.

Mr. KIRWAN. The reason I asked the question is because some of the railroads have abandoned a number of bridges, and a great deal of track between Erie, Pa., and New Castle, Pa. They have taken up one entire track of 100 miles because the tonnage over the track and bridges had fallen off to such an extent.

Colonel ALLEN. I would assume that the railroad considers it necessary because of their entering into this contract to the extent of $1 million.

Mr. TABER. Is this not a passenger road, more so than a freight road?

Colonel ALLEN. I understand it is primarily a freight bridge, Mr. Taber, to accommodate the rail traffic to Staten Island.

Mr. TABER. I see.

NORFOLK & PORTSMOUTH BELT LINE RAILROAD BRIDGE

Mr. MARSHALL. The next item for consideration is the bridge project at Norfolk. We will insert pages 32 and 33 of the justifications into the record at this point.

(The pages referred to follow.)

ALTERATION OF NORFOLK-PORTSMOUTH BELT LINE RAILROAD BRIDGE, NORFOLK HARBOR, VA. (NEW)

Location.—The Norfolk & Portsmouth Belt Line Railroad bridge crosses the southern branch of the Elizabeth River 2.03 miles above the junction with the eastern branch and about 1,350 feet downstream from the highway toll bridge connecting Portsmouth and South Norfolk, Va.

Authorization.—Act of June 21, 1940 (Truman-Hobbs Act).

Benefit-cost ration.—Not applicable.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$2,302,000	
Estimated local cost	390,000	
Estimated project cost	2,692,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	800,000	35
Balance to complete after fiscal year 1956	1,502,000	

PHYSICAL DATA

Vertical lift span: 383 feet long.

Horizontal clearance: 300 feet.

Vertical clearances: Fully raised, 145 feet above m. l. w.; lowered, 14.5 feet above m. l. w.

STATUS (JANUARY 1, 1955)

Not started.

COMPLETION SCHEDULE

November 1957.

JUSTIFICATION

Under existing conditions there is the grave possibility of accidents involving this bridge and the highway bridge next upstream. The current navigation hazards at the railroad bridge, and the possibility of operational failure of vessels or tugs, present a serious situation that could easily cause another major accident which could be very detrimental in temporarily halting movements of naval vessels to and from important Navy terminals upstream from the bridge, including the operation of ammunition barges to and from the Saint Julian Ammunition Depot. Also, temporary blocking of the 35-foot channel in the Southern Branch, which serves numerous petroleum and fertilizer industries, would seriously affect the shipping activities in the port of Norfolk. Previous major accidents involving this bridge, which occurred in 1939 and 1943, caused total damage to the highway bridge of $440,260 and from partial to total blocking of the channel. Four major oil companies and eight large fertilizer industries upstream from the bridge are directly dependent upon foreign and coastwise deliveries for successful operation.

Since 1943, 35 minor accidents have occurred at the railroad bridge, resulting in a total damage of $33,500. Extraordinary precautions, i. e., special pilot service and additional tugs, have been used for many years to facilitate movements of large ships through the railroad bridge and the highway bridge next upstream, representing an additional annual cost of $300,000 to shipping interests. Supertankers, 542 feet long, 75 feet beam, and drawing 34 feet are now being moved through the existing obstructive bridge with great difficulty and effort, with such movements accomplished only under the most favorable conditions.

Another important benefit would result from the alteration of the subject bridge, i. e., the ability of hopper dredges to perform maintenance dredging on the 35-foot channel in the Southern Branch. Because of the hazards of operating large hopper dredges through the narrow and misalined drawspan of the bridge, and due to the absence of suitable shore areas for disposal of material by

hydraulic method, maintenance dredging must be largely accomplished with a bucket dredge until such time as the bridge is altered. Based upon average annual channel fill of 146,000 cubic yards, it is estimated that the annual saving to the Federal Government by using a hopper dredge for maintenance rather than bucket dredge would amount to about $100,000.

Fiscal year 1956.—The requested amount of $800,000 will be applied to initiate the bridge alteration. The earliest practicable completion of the alteration project will result in full realization of the benefits to foreign and coastwise shipping moving on the recently dredged 35-foot channel in the Southern Branch.

Mr. MARSHALL. Colonel Allen, will you please tell us about this project?

Colonel ALLEN. This bridge is being altered under the provisions of the same Truman-Hobbs Act which I mentioned previously. An order to alter was issued on this bridge in 1947, and the cost apportionment has been made. The bridge owner is willing to proceed on the basis of a continuing contract.

The cost to the bridge owner in this case is $390,000, with an estimated Federal cost of $2,302,000.

The funds requested in fiscal year 1956, $800,000, will permit us to join with the railroad and initiate alteration of this bridge.

I have a few photographs here which you may wish to pass around, showing a vessel passing through the bridge, which we propose to alter. You can see the alinement of that bridge with respect to the bridge immediately upstream, and the difficulty that the ship is having in realining in order to enter the passage under the other bridge.

This Belt Line Bridge is a bridge which is jointly owned by 5 or 6 railroad companies which serve the Norfolk-Portsmouth area.

Mr. MARSHALL. What cost did you say would be borne by the railroads?

Colonel ALLEN. $390,000, sir.

Mr. MARSHALL. You have reached that agreement?

Colonel ALLEN. Yes, sir; we have.

Mr. MARSHALL. Have they agreed to proceed with the construction on an annual appropriation basis?

Colonel ALLEN. They have, sir.

Mr. MARSHALL. In the hearings on the fiscal 1952 appropriation bill, Mr. McGrath asked this question:

Colonel Potter, would you care to hazard your opinion as to what should be done on this particular bridge?

Colonel POTTER. Until they tell me, sir, that they are going to utilize certain kinds of ships, I would hesitate to do it. It depends upon what kind of ships they want to run up that river, and the number of them. The Navy's operation of ships has changed between the wars.

What has happened to change the opinion which was given at that time?

Colonel ALLEN. The commerce on this branch of the Elizabeth River, exclusive of naval use, was estimated to be around 6.6 million tons in 1953, and there were 516 deep-draft commercial vessel passages through this span. With the increase in vessel size, and the continuing use of the Elizabeth River, the order to alter which the Secretary of the Army gave in 1947, as having been found obstructive then, is even more important.

Mr. MARSHALL. Apparently Colonel Potter was thinking in terms of the needs of the Navy.

Does the Navy need it any more now than they did then?

Colonel ALLEN. I am not aware of the Navy requirements, sir, other than in a general way. Colonel Powers, could you add anything to that?

Colonel POWERS. Yes, sir, Mr. Chairman.

I was district engineer at Norfolk 3 years ago, and I am familiar with the conditions at this site. The Navy utilization of the channel above the bridge is primarily confined to the movement of ammunition barges from the St. Julian ammunition depot. Those barges are loaded above the bridge, and brought down through, the ammunition is transferred to destroyers, and other craft, in Hampton Roads, to prepare them for combat.

Any damage to this bridge and the closure of the channel to that traffic would make it extremely difficult for the Navy to transport its ammunition in times of an emergency. The main Portsmouth Navy Yard is below the bridge, and not above it.

The primary traffic is commercial to upstream fertilizer plants, and petroleum terminals.

Mr. TABER. Is that traffic carried mostly in barges?

Colonel POWERS. No, sir; very little of it is in barges. In fact, practically the only barge traffic is the Navy's barge traffic in ammunition.

The rest of the traffic is in self-propelled vessels, ordinarily handled by tugs.

Mr. TABER. The barges would all be small enough so that the present width of the channel would be enough to take care of them?

Colonel POWERS. Yes, sir; the barge traffic, of itself, does not experience too much difficulty getting through the Belt Line bridge. The point I was making, sir, was that if a large vessel were to be involved in an accident at the bridge site such that the waterway could not be used by the barge traffic, then the Navy would be injured.

Mr. MARSHALL. Would you indicate on that map just where this bridge is to be located?

Colonel POWERS. Yes, sir; it is just about in here [indicating]. This is Norfolk on this side, and Portsmouth down here, and this is the southern branch of the Elizabeth River here. This is the Hampton Roads area, and the Navy is building an ammunition loading terminal out in Hampton Roads, opposite the Craney Island project, which was just discussed. At the moment, they are just using an anchorage for transfer of the ammunition.

Mr. BOLAND. This bridge does not affect that project; does it?

Colonel POWERS. No, sir; it does not. I might point out, however, that if the bridge were altered, the Government could use hopper dredges to dredge the entire Elizabeth River, including the stretch above the Belt Line bridge, at a considerable savings over the cost of dredging the river by pipeline dredge.

The hopper dredge dumps into the rehandling basin at the Craney Island disposal area.

The annual savings are indicated in the justification sheets at about $100,000 a year.

Mr. MARSHALL. How heavy is the traffic over this Belt Line bridge?

Colonel POWERS. In terms of tons, I cannot say. However, the Belt Line bridge is an important link in the Belt Line railroad, which is formed of all the railroads serving the Norfolk and Portsmouth area, and they transship over that line in order to direct traffic to the

various piers, and holding areas all over the Portsmouth-Norfolk area, including the navy yard, and the great naval base at Norfolk, as well as the Army base at Norfolk.

I would say it is a large proportion of the tonnage that is brought into and taken out of Norfolk by rail.

Mr. KIRWAN. Is it your purpose to get naval vessels or commercial tankers through here?

Colonel POWERS. I am referring to commercial tankers, sir.

Mr. KIRWAN. As the matter now stands, they do not have much room in which to get through, do they?

Colonel POWERS. No, sir; they have a difficult time, and there are frequent minor collisions.

Mr. KIRWAN. If a ship should hit that pier, or collide with it solidly, instead of just brushing it, it would take the bridge out of there; would it not?

Colonel POWERS. Yes, sir; and if the accident were serious enough, it would not only injure commercial navigation on the stream, but it would also interfere with the operations of the combined ports of Portsmouth and Norfolk.

Mr. KIRWAN. It would also probably destroy the bridge?

Colonel POWERS. Yes, sir.

Mr. TABER. Does this railroad bridge carry practically all of the traffic between Norfolk and Portsmouth—the freight traffic?

Colonel POWERS. I would say the majority of such traffic, sir. The Norfolk & Western Railroad also has bridges across the Elizabeth River.

Mr. TABER. Yes; but they are higher up?

Colonel POWERS. Yes, sir.

Mr. TABER. That would not interfere with the tanker traffic?

Colonel POWERS. No, sir.

Mr. TABER. The bridge which is involved here is the one right at the end of the previous project, or just above the 40-foot channel, is it not?

Colonel ALLEN. It shows on the Craney Island sheet, sir. It is the one on the southern branch of the Elizabeth River.

Mr. TABER. This is not on the Elizabeth River, then.

Colonel POWERS. It is over the southern branch of the Elizabeth River, which is the main part of the river.

Colonel ALLEN. It is on the southern branch, Mr. Taber, located in that brown area on your sketch.

Mr. TABER. It is on the southern branch?

Colonel ALLEN. Yes, sir.

Mr. TABER. That is what I thought. It is right at the end of the 40-foot channel.

Colonel ALLEN. Where the 40-foot channel terminates, and the 35-foot channel begins; yes, sir.

Mr. TABER. I thought so.

The job there is one of carrying all the freight traffic of these different railroads, except the Norfolk and Western, into Norfolk, Va. Do you feel that they are putting up a fair share of the cost?

Colonel ALLEN. Yes, sir; that proportion was arrived at under the cost apportionment methods set forth in the Truman-Hobbs Act.

It is an old bridge, constructed in 1898.

One thing about this Truman-Hobbs Act which I think is worth while mentioning is that the cost to the railroad is based on the original capital cost of the bridge, and not the replacement cost. He assumes a proportion of the original capital cost of the bridge, dependent upon the assumed life of the bridge, and the number of years he has enjoyed the use of that bridge. Of course, when you take a bridge which was built in 1898 and compare the cost of that bridge to the cost of such a bridge today, there will be a considerable disparity. However, the Truman-Hobbs Act specifically limits the bridge owner's share to a portion of the cost of the original bridge, and it is on the basis of that act that this cost allocation was made.

TONNAGE OF SHIPPING

Mr. TABER. How much tonnage goes under this bridge?

Colonel ALLEN. Around 2.5 million tons, or 2.302 tons, to be exact.

Mr. TABER. It goes up, largely, into oil storage; does it not?

Colonel ALLEN. Petroleum and fertilizer are the two main commodities, sir.

Mr. TABER. The large ships would be handling practically only petroleum products?

Colonel ALLEN. Yes, sir.

The clearances under this bridge now are 109 feet, and 114 feet, through the 2 draw spans.

Mr. TABER. How much clearance do you plan to have as a result of this project?

Colonel ALLEN. We are providing clearances of 300 feet, sir.

Mr. TABER. That is all.

Mr. MARSHALL. Would you supply for the record the figures on the tonnage carried by this channel for the last 10 years?

Colonel ALLEN. Yes, sir.

(The information requested follows:)

Commerce passing through the bridge for the 10-year period cannot be furnished since the corps' commercial statistics data are compiled for Norfolk Harbor as a whole. The individual shipping and receiving reports are subsequently destroyed and are not now available for determining the traffic passing through the bridge.

It is estimated that the 1953 tonnage passing this site amounted to 6,600,000 tons.

DAMAGES CAUSED BY BRIDGE

Mr. MARSHALL. Could you also supply for the record the damages caused by this bridge in the last 10 years?

Colonel ALLEN. Yes, sir.

(The information requested follows:)

Damage to bridge through vessel collision

	Cost of damage		*Cost of damage*
1944	$2,646	1950	0
1945	2,474	1951	$899
1946	1,156	1952	6,819
1947	5,866	1953	1,473
1948	303	1954	7,938
1949	5,848		

A record of the damage to the vessels is not readily available.

Atlantic City Shore Protection

Mr. Marshall. The next project is the Atlantic City shore protection project. We will insert pages 37 and 38 of the justifications into the record at this point.

(The pages referred to follow:)

Atlantic City, N. J. (New)

Location.—Atlantic City, N. J.
Authorization.—1954 River and Harbor Act.
Benefit-cost ratio.—16.2 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$2,200,000	
Estimated local cost	4,400,000	
Estimated project cost	6,600,000	
Appropriations to June 30, 1954	0	
Qppropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	906,000	41
Balance to complete after fiscal year 1956	1,294,000	

PHYSICAL DATA

Sheet steel pile bulkhead at entrance to Clam Creek 150 feet long
Stone jetty seaward from Brigantine Island: 4,200 feet long
Stone groins:
- Vermont Avenue (extended): 180 feet long
- Caspian Avenue (new): 135 feet long
- Adriatic Avenue (extended): 100 feet long
- Melrose Avenue (new): 285 feet long
- Madison Avenue (extended) 155 feet long
- Grammercy Avenue (extended) 220 feet long
- Atlantic Avenue (extended) 50 feet long
- Euclid Avenue (extended): 40 feet long
- Pacific Avenue (extended): 40 feet long

Stone revetment, along inlet frontage: 4,000 feet plus
Extended Oriental Avenue Stone jetty: 200 feet
Timber groins:
- St. Charles Place: 760 feet long
- Virginia Avenue: 620 feet long
- North Carolina Avenue: 720 feet long
- St. James Place: 800 feet long
- Illinois Avenue: 920 feet long

Beach replenishment:
- Maine Avenue: 500,000 cubic yards
- Ocean front: 700,000 cubic yards

Status (Jan. 1, 1955)

(Construction undertaken by local interests)

	Percent	Completion schedule
Steel pile bulkhead at entrance to Clam Creek	100	
Stone jetty from Brigantine Island	32	Stone jetty from Brigantine Island, 1959. Vermont, Ave. Groin extension, 1956. Oriental Ave. jetty extension, 1956. Stone groins (remainder), 1959.
Stone groins:		
Madison Ave	100	
Grammercy Ave	100	
Stone revetment along Maine Ave	31	Stone revetment along Maine Ave., 1959.
Timber groins	100	
Beach replenishment: Completed	100	

JUSTIFICATION

The area within a 100-mile radius of Atlantic City is one of the most intensively developed and densely populated sections of the Nation, a circumstance that is largely responsible for the locality having become the most popular seaside resort on the Atlantic coast. The permanent population of Atlantic City is approximately 60,000 and the summer residents are estimated at 800,000. The economic life of the resort is based, to a great degree, on the preservation of the beach for recreational purposes. Atlantic City has completed a large part of the work in accordance with the project document because of the erosion that has occurred since 1949. They desire reimbursement of the Federal share of the work accomplished in accordance with the recommended plan and completion of the entire plan.

Fiscal year 1956.—The requested appropriation of $906,000 will be utilized for payment of the Federal share of the first cost of the improvements and protective work estimated to be accomplished by local interests through fiscal year 1956.

Mr. MARSHALL. We shall be glad to hear from you at this time on this project.

Colonel ALLEN. The beach-erosion-control project at Atlantic City, with a total cost of $6.6 million, was authorized in the 1954 River and Harbor Act. It provides for an improvement, consisting of groins, sandfill between the groins and a stone jetty.

The work recommended in this project has been initiated by local interests who have expended over $2 million thus far on the project.

The amount requested for fiscal year 1956, $906,000, provides for payment of the Federal share for work which will be placed before the end of fiscal year 1956.

You will note that the estimated Federal cost of the project is $2.2 million, and the estimated local cost is $4.4 million. That allocation was made in strict accordance with the applicable beach-erosion law, which limits the Federal participation in protecting publicly owned shores to one-third of the cost.

Mr. MARSHALL. Is this benefit-to-cost ratio of 16.2 to 1 correct?

Colonel ALLEN. Yes, sir; it is. It is an extremely high ratio because of the high value of the property protected.

Mr. KIRWAN. You are going to put in a break wall and jetties, extending out there, or what?

Colonel ALLEN. There is a jetty at the southern end of Brigantine Island, which will reduce the erosion in the northern part of Atlantic City. The other part of the projects calls for groins, with sandfill in between the groins. The groins will assist in the maintaining of that fill, and stabilize it.

Mr. KIRWAN. The project will consist of driving piles down and placing stones in between the piles?

Colonel ALLEN. They are stone and timber groins, sir.

Mr. BOLAND. Does the beach-erosion law pertain only to publicly owned shorelines?

Colonel ALLEN. The beach-erosion law limits Federal participation to publicly owned shorelines. It does not preclude, however, the consideration of the protection of privately owned land in a beach-erosion cooperative study, but as far as Federal financial participation in construction of beach-protection measures is concerned, it is limited to publicly owned property.

Mr. BOLAND. The contribution in the case of publicly owned property is to the extent of one-third of the cost by the Federal Government?

Colonel ALLEN. Yes, sir.

Mr. BOLAND. What are groins?

Colonel ALLEN. Groins are wood and timber structures constructed at the shoreline and normal to it, and filled, generally, with sand.

Mr. BOLAND. When you speak of "beach replenishment," that means the replenishment with sand; is that right?

Colonel ALLEN. Yes, sir; that is correct.

Mr. TABER. What local interests own this property?

Colonel ALLEN. The ownership is by the city of Atlantic City.

Mr. TABER. They own that entire strip?

Colonel ALLEN. They own the waterfront; yes, sir.

Mr. TABER. Does that cover this boardwalk setup, or just part of it?

Colonel ALLEN. I am not sure to what depth Atlantic City has ownership in the property, but such ownership is sufficient to enable them to qualify for Federal participation.

Mr. TABER. The project, according to the map, covers a strip there on the ocean of approximately 4 or 5 miles?

Colonel ALLEN. It is about 9,000 feet, sir, from the southern end of the inlet down to the pier at the end of Arkansas Avenue.

Mr. TABER. It would be more than that if you put the scale which is used on the map on it.

That is all I have, Mr. Chairman.

COLD SPRING INLET

Mr. MARSHALL. The next project is the shore-protection project at Cold Spring Inlet, and at this point in the record we shall insert pages 42 and 43 of the justifications.

(The pages referred to follow:)

COLD SPRING INLET (CAPE MAY HARBOR), N. J. (NEW)

Location.—Cold Spring Inlet is located 6 miles east of the point of Cape May, in the southwestern extremity of the New Jersey coastline, at the entrance from Atlantic Ocean to Delaware Bay.

Authorization.—1954 River and Harbor Act.

Benefit-cost ratio.—1.72 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$264,000	
Estimated local cost	1,030,000	
Estimated project cost	1,294,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	
Appropriations requested for fiscal year 1956	60,000	23
Balance to complete after fiscal year 1956	204,000	

PHYSICAL DATA

Extension of 5 stone groins 100 feet each.
Timber or stone groins (new):
Baltimore Avenue: 400 feet long.
Trenton Avenue: 400 feet long.
1,100 feet west of Windsor Avenue: 525 feet long.
2,200 feet west of Windsor Avenue: 525 feet long.
3,300 feet west of Windsor Avenue: 525 feet long.
Beach replenishment for 100 feet to 200 feet width.

STATUS (JANUARY 1, 1955)

Construction by local interests.
2 stone groins completed.
3 stone groins extended.
Beach replenishment, not started.

COMPLETION SCHEDULE

Groin construction, fiscal year 1958.
Groin extensions, fiscal year 1958.
Beach replenishment, fiscal year 1959.

JUSTIFICATION

Cold Spring Inlet has been improved by dredging an entrance channel 25 feet deep and 400 feet wide and constructing 2 parallel stone jetties for its protection. The jetties were completed in 1911. The shoreline, which is the prime object of consideration, extends from Cold Spring Inlet to the extreme end of Cape May and thence around the point of the cape along the shore of Delaware Bay. It includes the frontages of the United States Coast Guard base, the city of Cape May, and the borough of Cape May Point. Cape May City is one of the oldest summer resorts in the country. It has a year-round population of approximately 2,700 and a summer population of about 20,000.

Progressive erosion on the beach along the shore due to the action of waves and winds threatens the use of the airfield runways at the Coast Guard base, has reduced the formerly ample strand in front of Cape May City to the vanishing point and has greatly reduced the beach along the remainder of the section under consideration. The economy of Cape May City is dependent in large part upon the people attracted to the resort by the beach.

The shore protection project provides for the protection and restoration of the beach in front of Cape May City by the construction or extension of groins and the replenishment of the beach by the depositing of sand thereon.

Fiscal year 1956.—Funds in the amount of $60,000 will be applied to reimburse local interests for the Federal share of work accomplished to the end of fiscal year 1956.

Mr. MARSHALL. Colonel Allen, will you please tell us about this project?

Colonel ALLEN. This project was authorized in the 1954 act. Cape May City is at the southern end of the State of New Jersey, and it has

suffered from severe erosion for a number of years, and various means of protection have been employed.

The appropriation requested for 1956 represents the Federal share of work done or estimated to be placed by the end of fiscal year 1956 by local interests. All of the property area is not publicly owned, which explains the fact that the normal one-third to two-thirds ratio does not appear.

The estimated Federal cost is $264,000; whereas, the estimated local cash contribution is in excess of $1 million.

Some of the properties in the problem area were not publicly owned, and hence could not qualify for Federal participation.

Local interests have proceeded with certain of this work in the recommended plan, and the funds requested will bring the Federal Government into the venture with funds proportionate to what the law provides.

Mr. MARSHALL. I note from the planning report that the local people deviated somewhat from the approved plan.

Would you explain that? Have they entered into a firm agreement with the Federal Government on this matter?

Colonel ALLEN. The local interests have deviated to some extent in the type of structures provided. They have lengthened the groins in some instances, in which case the Federal participation would only go to the extent of that recommended in the project document; in the case of some of these beach-erosion projects, local interests desire to either lengthen the groins or construct them of a different type of material. If the district engineer and the Beach Erosion Board, in reviewing the plans and specifications, feel that this work is beyond what is required to make this a stable project, the cost borne by the Federal Government will only be applied to the portion which is included in the project document.

Mr. MARSHALL. This change in design would not increase the Federal contribution?

Colonel ALLEN. No, sir.

Mr. MARSHALL. According to your project schedule, this project will not be completed until 1958. Is there any danger that the work done in 1956 would be lost if they had a bad storm in 1957?

Colonel ALLEN. There is always that danger, Mr. Chairman, with respect to a beach-erosion project. The work does, normally, have to be programed consistent with the availability of local funds, but any work which is constructed along a shore line, faces the possibility of damage if it is struck by a severe storm.

Mr. KIRWAN. All of these projects consist of about the same type of construction; do they not? The Federal Government has a small portion as its share for publicly owned lands which come under the act?

Colonel ALLEN. That is correct.

Mr. KIRWAN. Every one of the various beach-erosion control projects are about the same?

Colonel ALLEN. The maximum extent of Federal participation in any event would be only one-third.

OCEAN CITY, N. J.

Mr. MARSHALL. The next project which we have for consideration is the shore protection project at Ocean City, N. J. At this point in the record we will insert pages 47 and 48 of the justifications.

(The pages referred to follow:)

OCEAN CITY, N. J. (NEW)

Location.—Ocean City is located on the Atlantic coast of New Jersey about 35 miles northeast of Cape May at the entrance to Delaware Bay.
Authorization.—1954 River and Harbor Act.
Benefit-cost ratio.—5.20 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$108,000	
Estimated local cost	887,000	
Estimated project cost	995,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	
Appropriations requested for fiscal year 1956	67,000	62
Balance to complete after fiscal year 1956	41,000	

Beach replenishment: Length, 9,050 feet; width, approximately 300 feet from boardwalk or bulkhead.

PHYSICAL DATA

Extensions to existing stone groins: Morningside Road, 295 feet; 1st Street, 210 feet; 3d Street, 275 feet; 5th Street, 405 feet; 7th Street, 310 feet; 9th Street, 310 feet; 11th Street, 280 feet.

STATUS (1 JANUARY 1955)

(Construction by local interests.)
Beach replenishment: Completed.
Extension to groins: Not started.

COMPLETION SCHEDULE

Extension to groins: 7th, 9th, and 11th Streets, 1956; 5th Street, 1957; 3d and 1st Streets, 1958; Morningside Road, 1959.

JUSTIFICATION

Ocean City is one of the large seashore resorts in southern New Jersey whose economy is dependent upon a suitable beach for recreational purposes. There is a winter population of approximately 7,000 and a summer population exceeding 100,000 at the height of the summer season. The improvement proposed consists of placing sandfill along the shores of Ocean City area and the construction of groins. Construction of the project is necessary to protect the economy of the area.

Fiscal year 1956.—The requested appropriation of $67,000 provides for payment of the Federal share of the first cost of the authorized improvements and protective work estimated to be accomplished by local interests to the end of fiscal year 1956.

Mr. MARSHALL. Colonel Allen, we shall be glad to have your comments on this project.

Colonel ALLEN. This project, also, was authorized in the 1954 River and Harbor Act, and it provides for the construction of groins and beach fill to protect the town of Ocean City, which is on the southern coast of New Jersey. It has also suffered from severe erosion for a number of years, and a number of structures have been built to alleviate the damage, and protect the frontage.

This project is the result of a cooperative study between the United States and the city of Ocean City.

A portion of this work has already been placed by local interests. There is some work remaining to be done, and the estimated Federal cost is $108,000, with $887,000 being borne by local interests.

The amount of $67,000 in 1956 will be the Federal share of the work expected to be placed by the end of 1956.

Mr. MARSHALL. Has this work been done to date, in conformity with the approved plan?

Colonel ALLEN. In general, Mr. Chairman. A study is now underway by the Beach Erosion Board to determine the suitability and acceptability of the material thus far placed by local interests.

Mr. TABER. This is another case, where, when, you look at the scale on your map, it runs 15,000 feet, instead of 9,000 feet. I do not know whether the rest of the maps are as accurate as that, or not. I guess that is all, Mr. Chairman.

VIRGINIA BEACH, VA.

Mr. MARSHALL. The next project is for shore protection at Virginia Beach, Va. At this point in the record we shall insert pages 52 and 53 of the justifications.

(The pages referred to follow:)

VIRGINIA BEACH, VA. (NEW)

Location.—Virginia Beach is located on the Atlantic Ocean in Virginia, about 19 miles east of Norfolk and 3.5 miles south of Cape Henry, at the entrance to Chesapeake Bay.

Authorization.—1954 River and Harbor Act.

Benefit-cost ratio.—4.7 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$560,000	
Estimated local cost	1,120,000	
Estimated project cost	1,680,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	235,000	42
Balance to complete after fiscal year 1956	325,000	

PHYSICAL DATA

Beach replenishment: Direct placement of sand to provide a flat berm 100 feet wide sloping to ocean floor, for a distance of 3.3 miles. Timber groins, 6.

STATUS (JANUARY 1, 1955)

Artificial restoration of beach completed by city of Virginia Beach, Va., in 1952–53.

COMPLETION SCHEDULE

Beach restoration: 100 percent complete (by local interests)—Construction of groins: Deferred indefinitely.

JUSTIFICATION

The resort business is the only industry of the city of Virginia Beach, which has a permanent population in excess of 5,000 people. The loss of its beach would result in bankruptcy for most of the city's inhabitants. Critical erosion at Virginia Beach demanded that the beach be restored as early as possible, without waiting for the formal adoption of a project by Congress or appropriation of Federal funds. To have delayed the restoration would have meant heavy physical damage to ocean front properties, as well as economic disaster for the city.

The tourist trade is the second largest industry in the State of Virginia. By reason of its national prominence and attractiveness, Virginia Beach contributes substantially to the economy associated with the State's tourist travel. This fact has been acknowledged by resolution adopted by the Virginia Travel Council.

Virginia Beach is Virginia's only ocean resort and affords healthful recreational benefits to tens of thousands of people, including thousands of service personnel from nearby military installations.

The resort industry makes it necessary for the city to construct and maintain public utilities for a population several times in excess of the normal needs of its permanent population; this feature alone usually requires that all financial assets of the city be committed well in advance; particularly so, where such facilities must be maintained and improved from year to year. When the acute erosion problem was added to its utility needs, the city was forced to increase its bonded indebtedness to the limit fixed by State law. The bonds were issued with the expectation that, upon adoption of a Federal project, one-third of the cost would be reimbursed by the Federal Government.

Since completion of the beach restoration work, the city has demonstrated that it fully intends to live up to its agreement to maintain the improvement throughout its useful life. The city has employed a firm of consulting engineers to maintain a continuous study of its beach and the maintenance thereof. Maintenance work is being accomplished as the need therefor develops and long-range plans for the protection and preservation of the restored beach have been developed and placed in practice.

Fiscal year 1956.—The requested amount of $235,000 will be utilized to reimburse the city of Virginia Beach, Va., for the Federal share of the cost of the beach restoration work accomplished by the city.

Mr. MARSHALL. We shall be glad to hear from you, Colonel Allen, on this project.

Colonel ALLEN. The project at Virginia Beach provides for beach fill and groins to protect the town of Virginia Beach, which is an intensively developed resort area.

This area has suffered from severe erosion in the past, and various types of defensive works, including seawall, bulkheads, and so forth, have been constructed over a period of years by local interests.

In 1946 a cooperative study was entered into by the Federal Government, and the city of Virginia Beach, which resulted in a report which formed the basis for this project.

Since completion of the report, the town has completed the beach fill, and has already undertaken the subsequent maintenance of the project.

The funds in this year's budget represent the Federal share of the work thus far accomplished.

The estimated Federal cost of the full project is $560,000, and the estimated local cost is $1,120,000.

There is a very good possibility that the balance to complete this project may not be required.

That balance of the work would be in the form of deferred groins. In this project, because of the uncertainty as to how the project will behave, the sandfill was placed first, and observed for several years to determine whether or not the groins are actually needed. In this

case the project has been in place for a little better than 2 years, and it is behaving very nicely, and there is a very good possibility that the groins may never be required.

Mr. MARSHALL. I notice that the project schedule shows no obligations scheduled for the period of 1957 through 1961, and it indicates that it will take $325,000 to complete the project after 1961.

What is the significance of this?

Colonel ALLEN. That is what I just mentioned, sir, to the effect that it cannot be determined now when and if the groins will be required. So, we cannot say now that the groins will be constructed in any particular year. It will depend upon observation and behavior of the pending project.

Mr. MARSHALL. If they are not needed, this completes this project?

Colonel ALLEN. That is correct, sir, and the project document in this case specifies that the groins are authorized, but that they could not be constructed until the beach fill has been observed, and in place.

ANACOSTIA RIVER BASIN

Mr. MARSHALL. The next project for consideration is the local flood-protection and navigation project on the Anacostia River, commonly referred to as the Peace Cross project.

At this point in the record, we will insert pages 57, 58, and 59 of the justifications.

(The pages referred to follow:)

ANACOSTIA RIVER BASIN, D. C. AND MD. (CONTINUING)

Location.—District of Columbia along the channel of the Anacostia River and Maryland along the upper section of the river and its northeast and northwest branches from their confluence at Bladensburg, Md., 8.5 miles above the mouth of the Anacostia River at its juction with the Potomac River at Washington, D. C.

Authorization.—Flood Control Act of 1950.

***Benefit-cost ratio.*—1.91 to 1.**

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$7,600,000	
Estimated local cash contribution	0	
Estimated project cost	7,600,000	
Appropriations to June 30, 1954	278,000	
Appropriations for fiscal year 1955	900,000	
Appropriations to date	1,178,000	15
Appropriations requested for fiscal year 1956	2,750,000	51
Balance to complete after fiscal year 1956	3,672,000	

PHYSICAL DATA

Relocations: Baltimore & Ohio Railroad bridge No. 1–A, 0.3 mile.

Channels: Navigation, 2.4 miles long, 80 feet wide, 6 feet deep, including boat basin.

Flood control, improvement of 3.7 miles along the Anacostia and its branches.

Levees: Average height, 12 feet; length, 28,100 feet.

Pumping plants: Four.

Pressure conduits: One, 2,213 feet in length.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Relocations	0	April 1956.
Channels:		
Northeast Branch	3	June 1956.
Section 1, Anacostia River	0	March 1957.
Section 2, Anacostia River	0	June 1957.
Northwest Branch	0	Do.
Levees:		
Northeast Branch	5	June 1956.
Section 1, Anacostia River	0	March 1957.
Northwest Branch	0	June 1957.
Edmonston pressure conduit	0	December 1955.
Pumping plants:		
Bladensburg pumping station	0	March 1957.
Edmonston pumping station	0	Do.
Brentwood pumping station	0	June 1957.
Colmar Manor pumping station	0	March 1957.
Entire project	5	June 1957.

JUSTIFICATION

The project will provide a high degree of flood control for seven fast-growing communities in Prince Georges County, Md., from frequent floods on the Anacostia River and will prevent interruptions to traffic on major northern approaches to Washington due to flooding of the Peace Cross area, thus eliminating extensive annual flood damages. The project will also restore navigation to Bladensburg, Md., and promote waterborne traffic in the area. Completion of the project will benefit not only the population of Prince Georges County of 194,182 in 1950 but will also benefit the entire Washington metropolitan area by insuring uninterrupted transportation over major highways to and from the Capital and will promote development of park areas along the river channels to serve the recreational needs of a population in excess of 500,000. The project is strongly supported by local interests which are prepared to provide lands and execute construction at an estimated cost of $5,280,000. Of this amount $4,250,000 have already been made available for the reconstruction of highway bridges, lands, relocations, and interior drainage. The balance of local cooperation construction would be provided as the work on the project progresses.

Fiscal year 1956.—The requested amount of $2,750,000 will be applied to:

Complete relocation of the Baltimore & Ohio RR bridge No. 1A	$458,200
Complete construction of levees and channel improvement, northeast branch	550,000
Complete construction of Edmonston pressure conduit	282,000
Initiate construction of channel and levee improvement, section 1, Anacostia River and Colmar Manor-Cottage City levees	655,600
Initiate construction of Bladensburg pumping station	200,000
Initiate construction of Edmonston pumping station	145,000
Initiate construction of Colmar Manor pumping station	140,000
Engineering and design	113,200
Supervision and administration	206,000
Total	2,750,000

The completion of construction on the Northeast Branch, the Edmonston pressure conduit, and the relocation of the Baltimore & Ohio bridge jointly with the Edmonston pumping station will complete the protection of the communities of Riverdale and Edmonston and form the northern protection for Bladensburg and the important Peace Cross area.

The construction of section 1, Anacostia River and Colmar Manor-Cottage City levees, jointly with the Bladensburg and Colmar Manor pumping stations, will complete the protective levees along the southern part of Bladensburg and the Peace Cross area and will also protect Colmar Manor and Cottage City from flood stages on the Anacostia River.

The work proposed for fiscal year 1956 will permit completion of the project by the end of fiscal year 1957 when full protection of the project area and benefits from the completed work would be secured.

Mr. MARSHALL. Colonel Allen, would you please give us a statement on this project?

Colonel STARBIRD. Mr. Chairman, I will cover this project, please, sir.

This project is basically a flood-control project for the protection of 7 communities, having a population of slightly over 30,000 persons along the District of Columbia-Maryland line, north and east of Washington, D. C.

The project has an estimated cost of $7.6 million. That represents a reduction since last year, largely due to redesign of certain elements and works, of about $700,000.

The project was initiated with an appropriation in fiscal year 1955 in the amount of $900,000.

Glancing at your map, sir, the work initiated in fiscal year 1955 is that shown in green on the Northeast Branch in the upper-left-hand corner of your map. It includes channel improvement, largely, and a start of the relocation of the main Baltimore & Ohio freight line transfer bridge across the Northeast Branch.

The funds requested for fiscal year 1956 are $2,750,000. These funds will be used to continue the work already underway, shown in green. They will also initiate the next section of channel improvement; basically the section extending from Peace Cross up to just above the Baltimore & Ohio bridge, now under relocation.

This is a cooperative project in which the local interests are undertaking work and furnishing lands, rights-of-way, and public relocations to the extent of $5.3 million. The benefit-to-cost ratio of the project is 1.91 to 1.

Mr. MARSHALL. Will the construction of the new Baltimore Parkway have any effect on this benefit-to-cost ratio?

Colonel STARBIRD. Not on the benefit-to-cost ratio, sir.

Mr. TABER. Why does the local contribution not show on the summary sheet, page 57?

Colonel STARBIRD. We do not show the cost of work undertaken by local interests on the summary sheet, sir. We could show it in the future, if it is desired. It does show, sir, in the planning report.

Mr. TABER. Why would it not show on the other sheet? I do not know. It makes me think there is something different from the routine.

Colonel STARBIRD. No, sir. We have not been showing it on any summary sheets. The actual form was worked out with the staff, and I shall take that up so as to have it in the future, sir, if it is desired.

Whenever there is a cash contribution as contrasted with the cost of work the local interests will undertake we do show the cash contribution, sir.

Mr. MARSHALL. What is the status of the local cooperation? Has all the required land been obtained?

Colonel STARBIRD. About 80 percent of the total land for the project has been made available, sir. Substantially all of the lands required for the next section of work—to be awarded in September of 1955—has been made available. Cooperation here has been excellent. Local people have already initiated the contract for the relocation of the three bridges and also for the relocation of the necessary utilities.

Mr. KIRWAN. They have many floods out there; do they not?

Colonel STARBIRD. They are frequent, sir.

Mr. KIRWAN. Yes, I know.

Colonel STARBIRD. The more frequent are usually small, but they did have a record flood in 1933 that caused $500,000 worth of damage then. Now it would amount to about $3.5 million.

Mr. KIRWAN. Every other year or every 3 years they have a small flood there.

Colonel STARBIRD. The small floods, sir, occur several times a year.

Mr. KIRWAN. They interfere with traffic out there?

Colonel STARBIRD. Yes, sir.

Mr. KIRWAN. And do considerable damage to the houses.

Colonel STARBIRD. That is correct.

CUMBERLAND, MD., AND RIDGELEY, W. VA.

Mr. MARSHALL. The next item is the local flood-protection project at Cumberland, Md., and Ridgeley, W. Va. We will insert in the record pages 64, 65, and 66 of the justifications.

(The information is as follows:)

CUMBERLAND, MD., AND RIDGELEY, W. VA. (CONTINUING)

Location.—Local protection for Cumberland, Md., and Ridgeley, W. Va., located in Allegheny County in Maryland and Mineral County, W. Va., along Wills Creek and North Branch of Potomac River, 21 miles above the junction of the North Branch and South Branch, which form the Potomac River.

Authorization.—1936 and 1946 Flood Control Acts.

Benefit-cost ratio.—1.32.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$15,900,000	
Estimated local cash contributions	0	
Estimated project cost	15,900,000	
Appropriations to June 30, 1954	5,839,000	
Appropriations for fiscal year 1955	500,000	
Appropriations to date	6,339,000	40
Appropriations requested for fiscal year 1956	1,400,000	49
Balance to complete after fiscal year 1956	8,161,000	

PHYSICAL DATA

Levees: Average height, 15 feet; length, 13,000 feet.

Floodwalls: Average height, 14 feet; length, 1,600 feet.

Relocations: Western Maryland Railway, 0.50 mile; Baltimore & Ohio Railroad, 0.25 mile; Western Maryland Railway bridge.

Dam: Reconstruction of existing industrial dam.

Channels: Improvement 1.7 miles along North Branch, Potomac River; improvement 1.6 miles along Wills Creek.

Pumping plants: 3 pumping plants with attendant interceptor sewers.

Buildings, grounds, and utilities: 8 pressure conduits, length 11,200 feet.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Lands and damages	22	June 1957.
Relocations	0	June 1958.
Dams	100	
Channels:		
Wills Creek, sec. 1	100	
Wills Creek, secs. 2 and 3	0	June 1958.
Wills Creek, sec. 4	0	Do.
Potomac River, sec. 1	1	October 1956.
Potomac River, sec. 2	0	June 1958.
Levees and floodwalls:		
Levee, Potomac River, sec. 1	13	October 1956.
Levee, Potomac River, sec. 2	0	February 1958.
Floodwall, West Cumberland	100	
Floodwall, Ridgeley	53	November 1955.
Pumping plants:		
Viaduct	0	June 1957.
Mill Race	0	September 1957.
Ridgeley	0	June 1958.
Buildings, grounds, and utilities	100	
Entire project	37	June 1958.

JUSTIFICATION

The project will protect the principal business, industrial, and residential areas of Cumberland, Md., and Ridgeley, W. Va., against recurring floods on the North Branch of the Potomac River and Wills Creek. The floods of 1924 and 1936 caused damages amounting to $4 million and $2,364,000 respectively. A recurrence of the 1924 and 1936 floods, under present conditions of development in the flood plain, would cause damages estimated at $11,800,000 and $7,300,000 respectively. Annual flood-control benefits for the project are estimated at $918,900. Completion of the project at an early date is needed to prevent recurring flood losses. The city of Cumberland has expended approximately $1,600,000 for lands and required modifications and has agreed to continue their share of the required cooperation as work progresses.

Fiscal year 1956.—The requested amount of $1,400,000 will be applied to:

Continue acquisition of lands	$200,000
Continue construction of levees and channel improvement of Potomac River, section 1 and Ridgeley floodwall	1,060,000
Engineering and design	50,000
Supervision and administration	90,000
Total	1,400,000

The continuation of construction of the levees and channel of Potomac River, section 1 and the Ridgeley floodwall as scheduled will provide protection at an early date for approximately 25 acres of residential and business property in West Cumberland, Md., and 80 acres of residential and railway property in Ridgeley, W. Va.

Mr. MARSHALL. We would be glad to have your comments on this project.

Colonel STARBIRD. This project, sir, has an estimated cost of $15.9 million. It is a channel improvement and levee project for the North Branch of the Potomac River and for Wills Creek, within the cities of Cumberland and Ridgeley. Those cities have total populations of approximately 50,000 persons.

The appropriations to date have amounted to about 40 percent of the estimated Federal cost. The work accomplished to date is that shown in black on your map. Basically it is the improvement of the upper end of Wills Creek, together with the construction of certain pressure conduits to get the water rapidly through levee structures into the river.

The requested appropriation for fiscal year 1956 is $1.4 million. The work to be accomplished will be a continuation of the improvement of the lower end of the channel accomplishing work there shown in red and green; and the placing of the materials therefrom in the levees shown in red around Ridgeley.

The project has a benefit-to-cost ratio of 1.32 to 1.

This is another cooperative venture, where the local interests must pay for the major portion of the lands, rights-of-way and relocations.

Mr. TABER. When you get through with this are you going to be able to prevent flood damage?

Colonel STARBIRD. This is designed to take care of approximately the 200-year flood, sir. To answer your question, we will take care of anything except the very rare floods.

Mr. TABER. How big a town is this?

Colonel STARBIRD. The major part of the population is in Cumberland, sir. The two together have 50,000 persons.

As you can see from the map you are looking at, sir, the railroad yards in general are in Ridgeley, whereas major portion of the rest of the development is in Cumberland. The latter is the second largest city in Maryland.

Mr. TABER. This sounds like a pretty expensive job.

Colonel STARBIRD. This city has had very severe flooding, sir. It does take a rather extensive set of works to give it protection.

Mr. TABER. What are you going to do? Are you going to get rid of the water by pumping it into something?

Colonel STARBIRD. No, sir. The basic plan here is to increase the channel capacity so as to expedite the flow of the water downstream.

SWOYERSVILLE AND FORTY FORT

Mr. MARSHALL. The next project is Swoyersville and Forty Fort, Pa., which is another local protection project. We will insert pages 72, 73, and 74 of the justifications in the record at this point.

(The information is as follows:)

SWOYERSVILLE-FORTY FORT, PA. (CONTINUING)

Location.—Located in the boroughs of Forty Fort, Exeter, Wyoming, and West Wyoming, Luzerne County, Pa., on the right banks of the North Branch Susquehanna River, approximately 66 miles above its junction with the West Branch Susquehanna River.

Authorization.—1936 Flood Control Act.

Benefit-cost ratio.—4.61 to 1.00.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$4,160,000	
Estimated local cash contributions	0	
Estimated project cost	4,160,000	
Appropriations to June 30, 1954	1,395,000	
Appropriations for fiscal year 1955	400,000	
Appropriations to date	1,795,000	43
Appropriations requested for fiscal year 1956	400,000	53
Balance to complete after fiscal year 1956	1,965,000	

PHYSICAL DATA

Levees and floodwalls: Average height of levee, 22 feet; length of levee, 16,250 feet; average height of wall, 3 feet; length of wall, 2,550 feet.
Channels: New channel 0.76 mile for Abrahams Creek.
Pumping plant: One.
Bank stabilization: Along Susquehanna River 0.44 mile.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Levee unit 1: Levees and floodwalls	98	June 1955.
Levee unit 2:		
Channels	83	December 1955.
Levees and floodwalls	70	Do.
Levee unit 3: Levees and floodwalls	0	June 1956.
Levee unit 4:		
Levees and floodwalls	0	December 1957.
Pumping station	0	Do.
Bank stabilization	0	Do.
Subsistence unit:		
Channels	0	Deferred.
Levees and floodwalls	0	Do.
Entire project	41	

JUSTIFICATION

The project, when completed, will provide substantial protection for the boroughs of Swoyersville, Forty Fort, and a portion of Wyoming, West Wyoming, and Exeter. These communities are in the heart of the anthracite region and contain highly productive coal mines, whose uninterrupted production is important to the regional and national economy. The Wilkes-Barre Wyoming Valley Airport, which was used exclusively for training of pilots during World War II, lies within the protected area as does a section of the main arterial highway U. S. 11 and railroad lines which suffer damages and interruption of traffic one or more times each year.

In addition to providing protection for the above communities, this project will prevent the outflanking of the existing protective system for Kingston-Edwardsville, located contiguously downstream from Swoyersville-Forty Fort. Mine subsistence in the area beyond the upstream end of the existing protection for Kingston has encroached upon the natural divide between these communities. The present danger to Kingston through loss of the natural barrier by subsistence will be eliminated upon completion of the Swoyersville-Fort Fort project. The Swoyersville-Forty Fort area is a part of the Kingston-Edwardsville metropolitan area, of which it is an interdependent section from an economic and social standpoint.

Fiscal year 1956.—The requested amount of $400,000 will be applied to—

Complete construction of channels, levees, and floodwalls in levee unit 2	$135,600
Initiate and complete construction of levees and floodwalls in levee unit 3	201,200
Engineering and design	23,500
Supervision and administration	39,700

Accomplishment of construction outlined above will complete construction of levee unit 2, comprising Abrahams Creek diversion channel and levee; and initiate and complete levee unit 3 on Carpenters (Hicks) Creek. In the event of a major flood prior to completion of unit 3, the Abrahams Creek levee and diversion channel would be subjected to excessive flood flows from the Susquehanna River by way of Carpenters (Hicks) Creek, which would cause serious damage to the works under construction. Unit 4 includes the closing link in the chain of protective works, which must be kept open until the remainder of the protective structures is completed to prevent trapping of water within the protected areas. Until unit 4 is completed, other parts of the project will provide only minor reduction of flood damages. Its completion is essential to realize all the benefits inherent to the project.

Mr. MARSHALL. Will you give us your comments on this project?
Colonel STARBIRD. This project on the Susquehanna River, sir, has

an estimated cost of $4,160,000, a slight reduction since last year. There have been appropriated to date $1,795,000, or 43 percent of the project costs.

Looking at your map, sir, and reading from left to right, the project consists of four elements.

The one furthest to your left consists of wall and bank stabilization to prevent the breakover of high flows into an area downstream and immediately adjacent to this project, an area protected already by levees completed in 1943.

The second element of this project is shown in green and labeled "levee." It is a frontline levee along the Susquehanna River protecting the airport and a basic industrial area.

The third section of the project is shown perpendicular to the Susquehanna River in three green and red lines. The two outside lines represent levees and walls. The inside one represents an improved channel.

The portion furthest to your right, sir—the furthest upstream in other words—is a series of structures shown in red to block high flows from coming in through Carpenters Creek and flooding behind much of the built-up section of the city.

The green work is that already underway. With the funds requested in fiscal year 1956, $400,000, we will complete the diversion channel, and we will initiate and complete also the upstream section furthest to the right. This will leave the closure section of the downstream end still to be accomplished.

The benefit-to-cost ratio of the project, including benefits downstream in the already protected area, is 4.61 to 1. This is another cooperative venture.

Mr. MARSHALL. I notice in your planning report that local interests have indicated their inability to provide ponding areas, as they apparently agreed to to do. What is the current status of this matter?

Colonel STARBIRD. The status of that, sir, is that they have given assurance that they will either provide the ponding area or provide in the future at their own expense the necessary pumping plant to be constructed in lieu of the ponding area now planned.

Mr. KIRWAN. When was the most severe flood they had on the Susquehanna? What year was that?

Colonel STARBIRD. 1936, sir.

Mr. KIRWAN. When did you first go in there with flood protection?

Colonel STARBIRD. This project was initiated in 1953, sir. That is the current project. This is the first time we have gone into this particular area. The downstream area, the so-called Kingston-Edwardsville project, was completed in 1943.

Mr. KIRWAN. From Plymouth up to Forty-Fort you probably did some work?

Colonel STARBIRD. Up to Forty-Fort.

Mr. KIRWAN. You went up above West Pittston?

Colonel STARBIRD. We have accomplished other projects farther upstream, sir. I did not fully understand your question. Basically we have undertaken construction of the more urgent projects.

Mr. KIRWAN. When you get this completed up where the Lackawanna River is coming in with walls and levees, what protection will they have from floods?

Colonel STARBIRD. They will have protection against a flood equal to the 1936 flood.

Mr. KIRWAN. That is the largest they ever had?

Colonel STARBIRD. That is the largest they have had, sir. That is without any reservoir control upstream. Any reservoir control upstream will add to the factor of safety.

Mr. KIRWAN. Where would you put a reservoir upstream?

Colonel STARBIRD. Up in the headwaters area, sir.

Mr. KIRWAN. In New York or Pennsylvania?

Colonel STARBIRD. There are authorized reservoirs in both States. The constructed reservoirs are largely in New York, sir.

Mr. BOLAND. When was the first Federal Flood Control Act passed?

Colonel Starbird. The first general Flood Control Act was the Flood Control Act of 1936, sir.

Mr. BOLAND. That is the first time the Federal Government ever went into the business of trying to harness rivers to prevent floods?

Colonel STARBIRD. No, sir. That is the first law of general application countrywide. Prior to that time for an extended period we carried on flood improvement work on the lower Mississippi River and also on the Sacramento River beginning in 1917.

Mr. BOLAND. Those were specific laws dealing with those particular rivers for those areas?

Colonel STARBIRD. That is correct, sir.

Mr. BOLAND. That is all. Thank you.

Mr. MARSHALL. Mr. Taber?

Mr. TABER. How much damage was done in 1936?

Colonel STARBIRD. The 1936 damage was $777,000, sir. That is the damage in the Swoyersville Forty-Fort area only.

The 1946 flood caused damages here of about $853,000.

Recurrence of those two floods now would cause damages of around $3.9 million, for those two alone.

Mr. TABER. Will this stop it?

Colonel STARBIRD. Yes; it will give protection against floods the equivalent of these two.

Mr. TABER. Does the map show the territory where the damage occurred?

Colonel STARBIRD. That is correct, sir. That shading on the map—the green, dotted area—is the area that was flooded in the 1936 flood.

Mr. TABER. I notice you have a Wilkes-Barre Wyoming Valley Airport. That is not the main airport for Wilkes-Barre, is it?

Colonel STARBIRD. I cannot answer that, sir. I do not know whether that is the main one or not.

Mr. KIRWAN. That is only a local airport for the small planes, almost an emergency landing field. The main airport is in Avoca, between Scranton and Wilkes-Barre. That is higher up and away from the river altogether.

Mr. TABOR. I know where that is.

Mr. KIRWAN. The other one is just a small airport.

Mr. TABER. What is the status of your funds on this project?

Colonel STARBIRD. We have had 43 percent appropriated to date, sir. The $400,000 requested in fiscal year 1956 will bring us to 53 percent.

Mr. TABER. What is the unobligated balance?

Colonel STARBIRD. The unobligated balance estimated at the end of the year is zero. The unobligated balance as of March 31 was $75,000. The unexpended balance as of the 31st of March was $197,000.

Mr. BOLAND. In response to Mr. Taber's question you said that a recurrence of the 1936 and 1946 floods would result in how much damage?

Colonel STARBIRD. Damage of $3.9 million.

Mr. BOLAND. You actually would not get a recurrence, would you, with 43 percent of the project completed? You would not get that type of damage now?

Colonel STARBIRD. No, sir. I was using that to indicate what would be the effect under the current situation, price level-wise as contrasted with current project costs—to give you an indication of the worth of the project. There is not too much of the project accomplished as of the present moment. That front-line levee shown in green is complete. However, the remainder of the project which would prevent flooding into the downstream Kingston area has not been started yet. The part of the project up at the end of Carpenters Creek, at the far right end of your map, has not been started yet. Backwater flooding there would still occur.

Mr. BOLAND. Thank you.

WILLIAMSPORT

Mr. MARSHALL. The next construction project in this area is Williamsport, Pa., a local protection project.

We will insert in the record pages 78, 79, and 80 of the justifications.

(The information is as follows:)

WILLIAMSPORT, PA. (CONTINUING)

Location.—Along both banks of the west branch of Susquehanna River, Lycoming Creek, and the right bank of Millers Run, primarily within the city of Williamsport and the borough of South Williamsport, Lycoming County, Pa. For construction purposes, the project was divided into three major sections. Section 1 comprises the protective works for the main portion of the city of Williamsport, section II provides protection for the Newberry area of Williamsport and section III protects the borough of South Williamsport.

Authorization.—1936 Flood Control Act.

Benefit to Cost Ratio.—2.71 to 1.00.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$13,115,000	
Estimated local cash contributions	0	
Estimated project cost	13,115,000	
Appropriations to June 30, 1954	12,337,000	
Appropriations for fiscal year 1955	500,000	
Appropriations to date	12,837,000	98
Appropriations requested for fiscal year 1956	278,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Relocations:
Arch Street: 0.08 mile
Pennsylvania Railroad (six locations): 3.63 miles
Reading Railroad (two locations): 2.04 miles
City water main: Seven crossings.
Bridges: Pennsylvania Railroad at Bottle Run: 65 feet
Channels:
New channel 0.75 mile for Bottle Run
Improvement 0.83 mile along Lycoming Creek
Construction of 0.27 mile of pressure conduit and 465 feet of flume along Hagermans Run
Improvement 3.60 miles along Susquehanna River
Levees and floodwalls:
Average height of levee: 20 feet
Length of levee: 67,500 feet
Average height of wall: 10 feet
Length of wall: 4,800 feet
Pumping plants:
Ten pumping plants, including one with attendant interceptor sewer

Status (Jan. 1, 1955)

Sections I and III which include levee units 1, 2, 3, and 6 are in operation and are complete except for remaining bank protection, control manholes, and indefinitely deferred construction. In section II levee unit 5 is complete and levee unit 4 is 66 percent complete.

	Percent	Completion schedule
Relocations	99	June 1955.
Bridges	95	February 1955.
Channels	93	September 1955.
Levees and floodwalls	91	December 1955.
Pumping plants	95	June 1955.
Entire project	93	December 1955.

JUSTIFICATION

The existing project will provide protection with 4 feet of freeboard to the city of Williamsport, the Borough of South Williamsport, and portions of adjacent townships against Susquehanna River flood of magnitude equal to the greatest flood of record, which occurred in March 1936. It will also protect against floods in Lycoming Creek, which traverses the city and causes great flood damages. Total losses suffered by these communities during the March 1936 flood amounted to $10,594,000. They were damaged severely again during the flood of May 1946, with damages estimated at $8,800,000. Damages from 2 disastrous floods within a 10-year period demonstrate the urgency of completing the project at the earliest possible date to remove the threat of a recurrence of such severe flood damage. Within the area to be protected are located the business district and vast residential areas as well as important industrial sections. Main highway routes U. S. 14, 15, and 220 traverse the protected area. Within the limits of section II, for which the requested funds will be largely used, are located residential and commercial properties as well as such industries as Sweet's Steel Co., Armour Leather Co., Glyco Products Corp., flour mills and weaving mills, all of which are important contributors to the national defense in time of emergency. In addition to these industries, the interchange yards of the Pennsylvania, New York Central, and Reading Railroads, the largest in the region, are located in the Newberry area.

Fiscal year 1956.—The requested amount of $278,000 will be applied to:

Sec. I: Continue and complete construction of bank protection, and control manholes in units 1 and 3	$34,000
Sec. II: Complete construction of levees, seepage relief system, channels, and the 2 pumping stations in unit 4	211,000
Engineering and design	10,000
Supervision and administration	23,000

The funds requested will complete the project.

Mr. MARSHALL. What do you have to tell us about this project?

Colonel STARBIRD. This project, sir, has an estimated cost of $13,115,000. It is a project for protection of Williamsport and South Williamsport, lying on the two sides of the West Branch of the Susquehanna River. This is a relatively old project. It was initiated in 1940.

The funds requested for fiscal year 1956 are $278,000, which would be the amount required to complete the project.

The project has a benefit-to-cost ratio of 2.71 to 1.

The remaining work to be accomplished is primarily the completion of levee work, seepage control measures, and certain pumping plants already underway.

Mr. MARSHALL. Will you need the $278,000 to complete this?

Colonel STARBIRD. We feel we probably will, sir.

Mr. KIRWAN. That will give Williamsport what percentage of flood protection?

Colonel STARBIRD. This will give Williansport protection against the 1936 flood. I should mention that we always have a freeboard to take care of wind and wave action. The freeboard is 3 feet.

Mr. KIRWAN. What damage did the flood do at Sunbury, where the Western and Eastern Branches meet?

Colonel STARBIRD. Sunbury is already protected by a local protection project. I do not know the date of completion, sir.

Mr. KIRWAN. With the high waters of both branches, East and West, in 1936, surely it must have done something to Sunbury.

Colonel STARBIRD. I do not know the date of completion. Your statement is undoubtedly true, because I am sure it was not built until after the passage of the general act.

Mr. TABER. These two projects were started at the same time.

Mr. KIRWAN. Yes, but they were started after the severe flood of 1936.

Mr. TABER. That is right.

Mr. KIRWAN. Certainly it must have done plenty of damage to Sunbury, where both branches meet.

Colonel STARBIRD. I think that is undoubtedly true.

Mr. KIRWAN. You told us about the damage to Swoyersville and Wilkes-Barre and Kingston on the East Branch. I do not think you have it in your mind, but Sunbury must have had a tremendous amount of damage.

Colonel STARBIRD. I think that is right, sir, and I will insert it in the record.

Mr. KIRWAN. I wish you would. That would give us a good idea of what those two upstream projects mean not only to Williamsport and Wilkes-Barre but also for the protection of Sunbury, where they both meet.

(The information is as follows:)

Damages from the 1936 flood at Sunbury, Pa., were estimated at approximately $3 million.

Mr. TABER. This particular project would not have any great effect on Sunbury, would it?

Colonel STARBIRD. It would not have any effect on Sunbury, sir.

Mr. TABER. Because there is no water storage involved in this particular project?

Colonel STARBIRD. None, sir.

Mr. TABER. What is there in this project that remains to be done, outside of what you have already contracted for or provided?

Colonel STARBIRD. The only work not contracted for, I believe, is the seepage relief measure shown on the upper side of your map—the structure in red—and certain culvert work. That seepage work would be awarded in August 1955. All other work has been awarded, sir.

Mr. TABER. Is the work which remains to be done of any substantial importance?

Colonel STARBIRD. Yes, sir. The work actually remaining to be done is greater than the amount not yet awarded since certain work is underway under existing contracts. Physically the work remaining to be done includes the completion of certain of the pumping plants, the completion of bank stabilization measures, and seepage relief. Actually, as of the present moment we have work remaining to be done totaling about $700,000. However, $400,000 worth of that will be accomplished before the end of the year.

Mr. TABER. After you get the work that is already let out done, is there anything substantial that needs to be done?

Colonel STARBIRD. Only those seepage relief measures, sir, which are measures basically to add strength to the existing levee.

OPERATION AND MAINTENANCE

Mr. MARSHALL. The next item that we have is $9,463,200 for operation and maintenance. This is requested for about 40 projects.

We will insert in the record at this point pages 83 through 87 of the justifications.

(The information is as follows:)

JUSTIFICATION OF ESTIMATE

1. Navigation

(a) Channels and harbors.—The work to be accomplished under this activity consists of maintaining the navigation channels, harbors, and anchorages of coastal harbors and waterways by means of dredging, snagging, operation of navigation structures, and repairing harbor jetties and breakwaters; and periodic inspections and surveys to determine the condition of the projects for programing purposes and providing navigation interests with adequate information on existing channel conditions; all as authorized in the laws adopting river and harbor projects.

The budget estimate of $8,750,000 for fiscal year 1956 is required for essential maintenance work on 34 channel and harbor projects named in the list which follows. The projects listed have been subjected to an economic analysis and determined that continuing maintenance is justified. The amount of funds appropriated in recent years for this activity has not been sufficient to provide for the adequate and timely maintenance of all justified projects and has resulted in a substantial backlog of work, particularly structural repairs and the maintenance of moderate and shallow-draft navigation channels. This condition continues to exist.

Tentative allocation, fiscal year 1956

Delaware:	
Delaware River, Philadelphia to sea, Delaware, New Jersey, and Pennsylvania	4,500,000
Inland waterway from Delaware River to Chesapeake Bay, Delaware, and Maryland	670,000
Murderkill River	25,000
Wilmington Harbor	360,000

District of Columbia:	
Potomac River, elimination of water chestnuts	10,000
Washington Harbor	180,000
Maryland:	
Baltimore Harbor and channels	230,000
Baltimore Harbor drift removal	40,000
Knapps Narrows	20,000
Lower Thoroughfare, Deals Island	15,000
Neale Sound	15,000
Ocean City Harbor and Inlet	190,000
Twitch Cove and Big Thoroughfare River	15,000
Wicomico River	20,000
New Jersey:	
Absecon Inlet	150,000
Cohansey River	90,000
Cold Spring Inlet	50,000
Cooper River	60,000
Delaware River between Philadelphia and Trenton	250,000
Mantua Creek	60,000
Newark Bay, Hackensack and Passaic Rivers	130,000
New York and New Jersey Channels	190,000
Raritan River	130,000
Shoal Harbor and Compton Creek	70,000
North Carolina:	
Manteo (Shallow Bag) Bay	45,000
Pennsylvania:	
Schuylkill River	410,000
Virginia:	
Atlantic Inland Waterway (Norfolk)	420,000
Deep Creek	40,000
Hampton Roads, Norfolk, and Newport News Harbors (drift)	10,000
James River	150,000
Norfolk Harbor	50,000
Oyster Creek	25,000
Onancock River	75,000
Thimble Shoal and York Spit channels	15,000
Project condition surveys	40,000
Total channels and harbors	8,750,000
Total navigation	8,750,000

2. Flood Control

(*a*) *Reservoirs.*—The budget estimate of $99,000 provides for the operation and ordinary maintenance of 5 flood control reservoirs which include 4 reservoirs in the Southern New York project, viz., Almond, Arkport, East Sidney, and Whitney Point Reservoirs, and nondeferrable rehabilitation work. The amount requested in fiscal year 1956 is approximately $1,500 more than the amount available in fiscal year 1955 and is the minimum necessary for adequate and efficient operation and maintenance of the projects.

Tentative allocation fiscal year 1956

New York: Southern New York project reservoirs	68,000
Pennsylvania: York	28,000
Scheduling of flood-control reservoir operations	3,000
Total flood-control reservoirs	99,000

2. Flood control

(*b*) *Other (including channel-improvement projects, miscellaneous maintenance items, and inspections).*—The budget estimate of $74,200 provides for the minimum requirement of regular maintenance of channel-improvement units of the southern New York project, condition surveys, and inspection of completed works during fiscal year 1956. The estimate includes $3,000 for condition surveys in order to establish the extent of rehabilitation work necessary to place these projects in proper condition for transfer to local interests when legislation becomes available authorizing the termination of Federal responsibility for their maintenance.

Tentative allocation fiscal year 1956

New York: Southern New York project	$70,000
Inspection of completed works	4,200
Total flood control, other	74,200
Total flood control	173,200

5. Multiple purpose projects, including power

The budget estimate of $540,000 for operation and maintenance of the 2 projects in this category is the minimum amount necessary for operational requirements during fiscal year 1956. It contemplates deferment of other than indispensable ordinary maintenance and rehabilitation work. The total generating capacity of the Corps of Engineers multiple-purpose projects in this basin is 218,000 kilowatts.

Tentative allocation, fiscal year 1956

North Carolina: John H. Kerr Reservoir	$400,000
Virginia: Philpott Reservoir	140,000
Total multiple-purpose projects	540,000
Grand total Middle Atlantic basin	9,463,200

Mr. MARSHALL. Do you have any comments about this?

Colonel POWERS. The funds requested, sir, are in major part for the maintenance of channels and harbors in this area or in this basin. There are approximately 180 authorized completed projects.

Our review this year indicated that 18 of those projects no longer justify continued maintenance.

In our program for dredging in the next 3 years and structural maintenance in the next 6 years 82 of the projects require work; 34 of those projects require work during fiscal year 1956, and funds accordingly are being requested.

All of the projects have been reviewed within the past 18 months as to whether or not they are economically justified, and with the exception of a part of one of the projects they all are justified for continued maintenance.

Mr. MARSHALL. Will you place in the record at this point the amount spent for operation and maintenance in the last 5 years?

Colonel POWERS. Yes, sir; that information will be prepared.

(The information is as follows:)

Funds obligated for operation and maintenance, General Middle Atlantic Basin, fiscal years 1952 through 1956

Fiscal year 1952, actual	$8,085,600
Fiscal year 1953, actual	7,324,500
Fiscal year 1954, actual	7,284,900
Fiscal year 1955, estimated	11,190,700
Fiscal year 1956, estimated	9,567,000
Budget request, fiscal year 1956	9,463,200

DELAWARE RIVER, PHILADELPHIA TO THE SEA

Mr. TABER. A little more than half of this goes into the Delaware River. Is that for the maintenance of the 40-foot channel down below the city, or for something else?

Colonel POWERS. That is entirely for the maintenance of the 40-foot channel from Philadelphia to the sea, including the anchorages which are currently authorized and completed.

Mr. TABER. Does that silt pretty badly?

Colonel POWERS. It silts very badly. Over the years it is estimated that an average of more than 6 million yards of material flows into the stream from the headwaters.

I might say that we have studied that condition very carefully, and we have recently, within the past 2 years, modified our method of maintenance dredging on the Delaware River. We have in the past utilized hopper dredges to dredge the material and carry it over to a basin near the shore, dump it, and then use a pipeline dredge to rehandle it and put it ashore. We have also in the past used the hopper dredges in what we call agitation dredging, by pumping the material into the hopper and back over the side so that the current can carry the material downstream.

We have found that those methods have not efficiently removed the material permanently from the channel. Accordingly we have designed and now have in operation a new method known as the sump rehandler method. We have converted a hopper dredge so that it may operate as a basin and to pump materials to shore disposal areas. The hopper dredge working in the channel pumps only to overflow, thus allowing no material to go over the scoopers into the channel. It is carried to the rehandler. The hopper dredge is fitted with a pipeline to deposit the materials in the rehandler. The dredged materials are pumped from the hopper dredge into the rehandler and in turn pumped ashore. In that way the material never goes again to the bottom, being put ashore.

That operation commenced in December 1954, and we anticipate in the next 2 or 3 years to be able to show a marked improvement in the shoaling rates which have occurred in the past in the Delaware River.

Mr. TABER. You still do not have any method developed that would interfere with the upstream deluge they have been dumping into the river for years?

Colonel POWERS. No, sir; there is not any conclusive means of stopping that material from coming downstream. We can take corrective measures and we have on this and on other streams taken corrective measures to deflect the flow of that silt or material so that it will fall into and be deposited in areas where the channel is not required.

In the Philadelphia area the Schuylkill River has recently been dredged in an effort to reduce the amount of material which comes out of the Schuylkill into the Delaware River.

Mr. TABER. Does that silt come down just at floodtime, or does it come down all the time?

Colonel POWERS. It comes down all the time in the Delaware River. But, of course, the quantity being moved is accentuated by increased flows during floodtimes or freshets.

Mr. TABER. I have been up against this situation ever since 1923. I have always had the idea that you could do a good deal toward stopping the necessity for this enormous expenditure for dredging, if you gave a little attention to the upstream picture. I still have that idea. I think we could save easily half of that dredging cost if we did something of that kind intelligently. I hope sometime there will be some approach to it.

Mr. KIRWAN. If the States would do a better job of passing laws on strip mining it would help. This sort of thing happens in other areas,

too. Out in Missouri they have the lead mines, and the waste from them goes into the Missouri and the Mississippi.

Talking about the Susquehanna, in 1875 they ran steamboats between Harrisburg and Wilkes-Barre. Now you could not run a canoe on the Susquehanna. The mines have been dumping debris. The water washes it right out into the river, and there are huge culm piles. That is the difference now, 75 years after. You cannot run a canoe between Harrisburg and Wilkes-Barre, where in 1875 they had steamboat transportation.

Mr. TABER. I guess that is right.

Mr. KIRWAN. That culm is piled up. You have the same story for many streams in the country.

Mr. TABER. I do not think there is so much on the Delaware as there is on the Susquehanna. The Delaware up above does have some mines.

Mr. KIRWAN. It is the Schuylkill. The Schuylkill River deposits all of this stuff into Fairmount Park. What was the estimated cost of that to the State of Pennsylvania?

Colonel POWERS $35 million.

Mr. KIRWAN. $35 million just to take care of the debris from the coal mines out of the Schuylkill River. Pottsville and all those little towns have creeks that run into the Schuylkill River. This beautiful park, Fairmount Park—when one crossed the Schuylkill River there, had a river that was almost black going through it. There was a lot of it deposited on the ground.

Colonel POWERS. That is correct, sir. We have the problem of materials coming in from operations such as you describe, and also materials washed away from the banks during flood flows, which Mr. Taber remarked upon. The local protection works to protect areas quite often include the revetment of banks, which reduces erosion and thereby the material which comes down the river; and channel improvements also direct the flow of water so as to keep it from impinging on the banks and to correct the velocity, which will again reduce the quantity of materials coming down.

APRIL 27, 1955.

GULF AND SOUTH ATLANTIC BASINS

Mr. MARSHALL. The next area we will consider is the Gulf and South Atlantic, for which we will consider a request of $32,321,600 in the Corps of Engineers' budget and $1,160,000 for the Southeastern Power Administration, a total of $33,481,600.

We will insert the summary breakdown in the record at this point. We will also insert the breakdown by project of unobligated balances of funds already appropriated.

(The information is as follows:)

GULF AND SOUTH ATLANTIC

Budget estimate, fiscal year 1956

Appropriation	Corps of Engineers	Interior-Southeastern Power Administration
General investigations	$91,600	
Advance engineering and design	121,000	
Construction	25,327,000	
Operation and maintenance	6,782,000	$1,160,000
Total	32,321,600	1,160,000

Gulf and South Atlantic Basin

Project	June 30, 1954		March 31, 1955		Estimated, June 30, 1955	
	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance
Navigation:						
Mobile Harbor	0	0	0	0	0	0
Warrior lock and dam	0	0	$1,102,533	$1,380,400	$30,000	$875,000
Tampa Harbor	0	0	0	0	0	0
Charleston Harbor	0	0	0	0	0	0
Flood control: Central and southern Florida	$13,522	$1,079,247	523,678	1,652,676	0	250,000
Multiple purpose:						
Jim Woodruff lock and dam	2,084,616	3,889,555	[1] 319,412	[1] 2,947,203	[1] 92,000	[1] 1,326,000
Buford Dam	2,952,314	5,034,122	5,185,729	8,442,590	200,000	3,576,000

[1] Excludes $2,800,000 loan to other projects.

Mr. MARSHALL. Colonel Whipple, we would be glad to hear your general statement for this area.

GENERAL STATEMENT

Colonel WHIPPLE. Yes, sir. My name is Colonel William Whipple, Executive for Civil Works in the Office, Chief of Engineers.

The Gulf and South Atlantic Basins include the watersheds of a number of streams which flow to the Atlantic Ocean south of the Roanoke River and to the gulf east of the lower Mississippi and including the Pearl River, a total of approximately 260,000 square miles. Most of the larger streams arise in the Blue Ridge Mountains and flow through the Piedmont Plateau and the Gulf Coastal Plain to the Atlantic or the gulf. The Yadkin-Pee Dee, Santee, Savannah, Apalachicola-Chattahoochee-Flint, and Alabama-Coosa River systems are in this category. They are characterized by heavy rainfall and steep slopes in their headwaters, considerable soil erosion and sediment, particularly in the Piedmont areas, and flat, meandering slopes in their lower reaches terminating in tidal estuaries. Navigation on the lower portions of these streams has been carried on since early Colonial times. A considerable hydroelectric potential exists in the upper

reaches in areas where steeper slopes and better geologic conditions for dam sites exist. The entire area is subject to torrential storm rainfall originating from tropical disturbances of hurricane nature, and extremely heavy floods occur. Most of Florida is considerably different in nature from the rest of the basin, being low-lying and considerable parts poorly drained. The Gulf and South Atlantic Basins have been predominantly agricultural since the earliest days, but within recent years extensive diversified industrial developments have occurred. In a large section of the Florida peninsula, drainage and flood control are of critical importance.

Special problems pertaining to water supply, beach erosion, drainage, preservation of wildlife, and public recreation have arisen in connection with water resource activities in many parts of the basin.

NAVIGATION

The authorized navigation program in the gulf and South Atlantic area provides for harbors capable of accommodating deep-sea traffic, shallow-draft waterways bringing barge navigation up the principal streams, and long sections of Intracoastal Waterway along both the Atlantic and gulf coasts. In addition, there are a number of localized improvements of coastal harbors and connecting channels.

The principal deepwater harbors are at Wilmington, Charleston, Savannah, Jacksonville, Port Everglades, Tampa, and Mobile, all of which have authorized depths of 34 feet or more. Numerous other harbors have authorized depths ranging from 22 to 32 feet. New starts are proposed in fiscal year 1956 on the authorized modifications in Charleston, Tampa, and Mobile harbors.

The Atlantic Intracoastal Waterway follows the entire Atlantic coastline of this region as far south as Miami and is completed to 12-foot depth except from Eau Galie, Fla., to Miami, which is 8 feet deep. On the gulf coast, the gulf Intracoastal Waterway is essentially completed from Apalachee Bay westward to the Mexican border with a draft of 12 feet. The principal canalization project underway is that on the Chattahoochee and Flint Rivers by construction of the Jim Woodruff Dam. No new shallow draft new starts are proposed in fiscal year 1956. In addition to the principal navigation improvements discussed above, there are a number of small authorized navigation projects which will become eligible for construction in 1956 if funds applicable to such purposes are appropriated.

FLOOD CONTROL

By far the largest undertaking for flood control in this region is the central and southern Florida project for flood protection, drainage, and water conservation in an area of over 15,700 square miles in the vicinity of Lake Okeechobee and thence northward and southward of the peninsula. This project is well underway and the partially completed works are beginning to produce benefits and encourage development of idle lands. On the Coosa and Savannah Rivers completed Federal reservoirs providing flood control and power are already serving the region, and other authorized projects may be undertaken at an appropriate time. The Buford project, which will provide flood control and power on the upper Chattahoochee is under construction.

The Hartwell project, which will increase the flood control provided on the Savannah River, as well as adding available power to the region, is fully planned and can be initiated when funds become available. In addition, several levee and channel clearing rectification projects have been completed and others will be required at some other date. A limited degree of flood control will be provided in connection with power projects being planned by the Alabama Power Co. on the Coosa River in Alabama. The corps had an authorized multiple purpose project at Howell Mill Shoals on this same part of the river, but legislation last year suspended that authorization in order to allow the power company to proceed with a more extensive power development. This is an example of the partnership policy, authorized by the last Congress, in an instance where the flood control to be provided is relatively unimportant as compared to the power potential.

HYDROELECTRIC POWER

By far the greater part of the power in this region is provided by privately owned thermal powerplants. Such systems are supplemented by privately owned and Federal hydro projects. For the higher head developments, such hydroelectric projects are most economically employed with relatively large installed capacity to provide for peaking at times of maximum load, while base load is handled by steam plants. Comprehensive plans for multiple-purpose reservoir development, including power, have been authorized in the Savannah, Apalachicola and Alabama-Coosa Basins. In these basins the Clark Hill Reservoir has been completed, with 280,000 kilowatts installed, and the Allatoona project, with 74,000 kilowatts installed; and the Buford and Jim Woodruff projects are well underway. Other important authorized projects, including power, are the Hartwell, Fort Gaines, Jones Bluff, and Millers Ferry projects, in addition to the Coosa River partnership projects already mentioned. Additional power producing reservoirs have recently been recommended on the Warrior River.

Federal projects producing power in this region are constructed by the Corps of Engineers and the power is marketed by the Southeastern Power Administration of the Department of the Interior under authority of section 5 of the Flood Control Act of 1944. This administration also sells power from Corps of Engineers projects in the Cumberland and Roanoke watersheds. The power is marketed through contractural arrangements with public bodies, cooperatives, TVA, and private utility companies. The present installed capacity of 7 operating projects in the area served by the SEPA is approximately 1,030,000 kilowatts. The Southeastern Power Administration and the Corps of Engineers also work together in connection with cost allocations being made on the Corps of Engineers projects. Since the agreement of March 1954 on cost allocations between FPC, Interior Department, and Corps of Engineers, excellent progress has been made toward determination of cost allocations.

SHORE PROTECTION PROJECTS

Under this category there are four small shore protection projects along the gulf coast in Pinellas County, Fla., which were authorized

in 1954 with a minor Federal participation. No start is planned in the near future.

STATUS OF POWER PROJECTS IN AREA

Mr. MARSHALL. You mentioned,

Other important authorized projects including power are the Hartwell, Fort Gaines, Jones Bluff, and Millers Ferry projects.

Is the planning completed on all of these projects? Are they ready for construction?

Colonel WHIPPLE. No, sir; it is not. The planning is completed on Hartwell and substantially completed on Fort Gaines.

Mr. MARSHALL. Considerable planning remains to be done on the other two?

Colonel WHIPPLE. Yes, sir; I believe some planning money may have been spent on them, but they are not complete or anywhere near complete in planning.

Mr. TABER. What are the larger power projects that you have under construction at the present time?

Colonel WHIPPLE. There are only two, sir; the Jim Woodruff and the Buford projects.

Mr. TABER. Those are both under construction?

Colonel WHIPPLE. Yes, sir; they are both on the Apalachicola system of the Chattahoochee River.

Mr. TABER. We will be getting information on those as we go along in the hearings?

Colonel WHIPPLE. Yes, sir.

Mr. TABER. The Hartwell project has not yet been started?

Colonel WHIPPLE. That is correct, sir.

Mr. TABER. On what river is that?

Colonel WHIPPLE. It is on the upper Savannah River, above the Clark Hill project, which is already under construction and in operation.

Mr. TABER. Clark Hill is done?

Colonel WHIPPLE. It is completed and in full operation.

Mr. TABER. What is that producing?

Colonel WHIPPLE. 280,000 kilowatts of power plus flood control and flow regulation in the interests of navigation.

Mr. TABER. There is not much navigation there, is there?

Colonel WHIPPLE. Not a great deal up as far as the dam. In the lower reaches of the river I believe there is considerable.

Mr. TABER. It is quite far down, though. The lower 25 or 30 miles of it would be where most of that would be.

Colonel WHIPPLE. Yes, sir; that is correct. The channel will not be a full planned depth up as far as the dam until after the Hartwell project also is completed, which will give a further degree of flow regulation of the stream.

Mr. TABER. There is not any substantial flood control in either of those projects, is there?

Colonel WHIPPLE. Yes, sir; there is a very considerable amount of flood-control storage in both of them.

Mr. TABER. They have not had very serious damage from floods, have they, in that territory?

Colonel WHIPPLE. There has been a good deal. The flood plain is a relatively limited development. I could give you that in just a second, sir.

There are 390,000 acre-feet reserved in the Clark Hill project for flood control, and the annual benefits to flood control are evaluated at $185,000.

The Hartwell project will have additional flood-control storage and benefits. The power benefits, of course, are far and away the greater benefits for the project. The flood-control problem is not the major purpose of the project, but it is substantial.

Mr. TABER. Could you tell us anything about what the Clark Hill project is actually producing?

Colonel WHIPPLE. In the way of power, sir?

Mr. TABER. Yes.

Colonel WHIPPLE. Yes, sir. In the fiscal year 1954 it produced 528 million kilowatt-hours of power.

Mr. TABER. 528 million?

Colonel WHIPPLE. Yes, sir. That had a gross revenue of approximately $2.6 million.

Mr. TABER. What was the cost of that project?

Colonel WHIPPLE. The total cost was $78,576,000, sir. There is still minor completion work underway, so that that is not a final figure. The final figure will be slightly higher than that because it is not completed.

Mr. TABER. The $2.6 million represents receipts?

Colonel WHIPPLE. Yes, sir.

GENERAL INVESTIGATIONS

Mr. MARSHALL. The first item for consideration is "General investigations," for which $91,600 is requested. This amount is tentatively allocated to 8 projects.

We will insert in the record the breakdown appearing on pages 1, 2, and 3 of the justifications.

(The information is as follows:)

GULF AND SOUTH ATLANTIC DRAINAGE AREA

JUSTIFICATION OF ESTIMATE

1. Examinations and surveys

(a) Navigation studies.—The amount of $22,500 is requested for work on 3 studies in the gulf and South Atlantic drainage area during fiscal year 1956. This amount will permit completion of 1 report and continuation of 2 others.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation, fiscal year 1956	Additional to complete after fiscal year 1956
Florida:				
Gulf coast shrimp boat harbor	$36,000	$12,200	$7,500	$16,300
Port Everglades Harbor, Hollywood, Fla	22,300	0	10,000	12,300
South Carolina: Cooper River	10,400	5,400	5,000	0
Total	68,700	17,600	22,500	28,600

(*b*) *Flood-control studies.*—The amount of $54,100 is requested for prosecution of four studies in the Gulf and South Atlantic drainage area during fiscal year 1956. This amount will permit completion of the portion of the central and southern Florida studies now under way, completion of 2 other reports, and continuation of 1 report.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Florida: Central and southern Florida	$13,000	$3,000	$10,000	0
Georgia:				
Oostanaula River	25,000	15,000	10,000	0
Pearl River	74,000	31,700	15,000	$27,300
Rome, Ga	34,700	15,600	19,100	0
Total	146,700	65,300	54,100	27,300

(*c*) *Beach erosion cooperative studies.*—The amount of $15,000 is requested for completion of one study in the Gulf and South Atlantic drainage area.

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Florida: Palm Beach County	$15,000	0	$15,000	0
Total	15,000	0	15,000	0
Grand total	230,400	$82,900	91,600	$55,900

Advance Engineering and Design

Mr. Marshall. The next item is "Advance engineering and design," for which a total of $121,000 is requested for four projects. We will insert in the record the pertinent statistics from pages 4 and 5 of the justifications.

(The information is as follows:)

Gulf and South Atlantic

Justification of Estimate

Advance engineering and design

Funds in the amount of $121,000 will be applied to "Advance engineering and design" of one navigation project, a partnership study, and restudy of two projects in the Gulf and South Atlantic drainage basin. The planning for the navigation project will be brought to a stage where construction can be

initiated. The total estimated cost of this project is $28,600,000. The review of the two projects in the "deferred for restudy" category will be completed.

Project	Total estimated Federal cost	Allotments prior to fiscal year 1956	Tentative allocation fiscal year 1956	Additional to complete after fiscal year 1956
Navigation projects: Alabama: Jackson lock and dam	$28,600,000	$45,000	$70,000	$28,485,000
Flood-control projects: None.				
Multiple-purpose projects including power: Alabama: Coosa River	(1)		15,000	
Reexamination of projects in "Deferred for Restudy" category:				
Florida: Cross Florida Barge Canal	11,000		11,000	
North Carolina: Yadkin River Reservoirs	25,000		25,000	
Total, deferred for restudy	36,000		36,000	
Grand total, advance engineering and design	[1] 28,636,000	45,000	121,000	28,485,000

[1] Estimated cost of Coosa River partnership studies not reported since costs have not been determined.

Mr. MARSHALL. The committee will stand adjourned until 2 o'clock.

AFTERNOON SESSION

The committee will come to order.

At the time we recessed for lunch, we had just completed the general presentation and had inserted in the record the justification sheets on "General investigations" and "Advanced engineering and design."

Are there any questions at this point?

If not, we shall proceed to consideration of the next project.

CONSTRUCTION

MOBILE HARBOR

The first construction project is "Mobile Harbor," and we will insert pages 7 and 8 and 9 of the justifications in the record at this point.

(The pages referred to follow:)

MOBILE HARBOR, ALA. (40-FOOT PROJECT) (NEW)

Location.—Channel extending from the Gulf of Mexico via Mobile Bay and Mobile River to the highway bridge at Mobile; a distance of about 34.7 miles.

Authorization.—1954 River and Harbor Act.

Benefit-cost ratio.—3.48 to 1 (initial phase), 2.93 to 1 (ultimate phase).

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$5,778,000	
Estimated local cash contributions	0	
Estimated project cost	5,778,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	1,000,000	17
Balance to complete after fiscal year 1956	4,778,000	

PHYSICAL DATA

Channels:
Initial phase:
Mobile Bar Channel 38 feet deep, 600 feet wide, 1.5 miles long
Mobile Bay Channel 36 feet deep, 400 feet wide, 28.6 miles long
Mobile River Channel 36 feet deep, 500 feet to 775 feet wide, 4.6 miles long
Ultimate phase:
Mobile Bar Channel 42 feet deep, 600 feet wide, 1.5 miles long
Mobile Bay Channel 40 feet deep, 400 feet wide, 28.6 miles long
Mobile River Channel 40 feet deep, 500 feet to 775 feet wide, 4.6 miles long
Turning basins:
Initial phase:
Opposite Alabama State dock 36 feet deep, 800 feet to 1,000 feet by 2,500 feet
Opposite Magazine Point 36 feet deep, 800 feet by 1,400 feet with additional tapered section at each end
Ultimate phase:
Opposite Alabama State docks 40 feet deep, 800 feet to 1,000 feet by 2,500 feet
Opposite Magazine Point 40 feet deep, 800 feet by 1,400 feet with additional tapered section at each end

STATUS (JANUARY 1, 1955)

New start

COMPLETION SCHEDULE

Initial phase, June 1957; ultimate phase, June 1959

JUSTIFICATION

Mobile Harbor is a deep-water project serving the needs of seagoing commerce from the port of Mobile, Ala. Waterborne commerce of the port averaged 8,172,000 tons annually during the years 1946 through 1952, an increase of 68 percent over the average for the 4 years immediately prior to World War II. In 1952, 11,019,855 tons of commerce moved over the waterway, and in 1953 the commerce increased to 13,127,633 tons. The principal items of commerce are crude petroleum, iron, and aluminum ores and seashells.

Mobile, with a population of about 190,000 in its metropolitan area, is a port of entry and shipping outlet for an extensive area which contains timber and agricultural lands and is rich in mineral resources. The area includes the industrial region of Birmingham which is primarily a steel-producing center with local deposits of coal, iron ore, and limestone. Mobile has many industries including two large shipyards and numerous smaller ones; a plant which processes more than a million tons of imported bauxite annually for use in the manufacture of aluminum; paper mills; and plants producing food products, cotton goods, chemicals, iron and steel products; and other items. Several petroleum-producing fields are within 100 miles of Mobile. The port of Mobile is served by 4 railroads, improved highways, barge lines, and over 20 steamship lines engaged in ocean commerce. Many of the important terminals of the port are located along the west bank of the river between the highway bridge and the bay. A recently constructed oil-loading dock at Magazine Point just upstream from Three Mile Creek is connected by pipeline with petroleum-producing fields in Mississippi. Other oil terminals are located farther downstream and one is on the industrial canal. The Alabama State docks occupy an extensive frontage along the river, Three Mile Creek, and the industrial canal. Large quantities of bauxite and other bulk commodities are handled at the terminal on Three Mile Creek. A terminal to handle imports of Venezuelan iron ore, which will amount to 2 to 3 million tons annually was completed in January 1954.

More than 60 ships were involved in accidents in the Mobile Channel between 1946 and 1951 which might reasonably be attributed to inadequate channel dimensions. It is not unusual for deep-draft ships to drag bottom in transiting Mobile Channel and some operators state that mud is drawn into the condensers while the vessel is traveling fully loaded. Most of the collisions and many of the groundings occurred while ships were attempting to pass barge tows or other ships. It is estimated that damages and losses from ship casualties in Mobile Channel amount to $200,000 annually.

Provision of the initial-phase improvement of Mobile Harbor would eliminate more than 50 percent of the damages and losses attributable to inadequate channel dimensions. Tankers as large as the supertankers of 28,000 deadweight tonnage and aluminum-ore carriers of 30,000 deadweight tonnage will be able to utilize the channel fully loaded if operated with due care. Utilization of the channel by deeper draft vessels fully loaded will result in a savings in transportation costs of about $1 million annually.

The ultimate phase development (40-foot project) will be warranted when a sufficient number of super ore carriers and other comparable vessels are placed in operation. One super ore carrier or 60,000 deadweight tonnage was placed in service on the Venezuela-Mobile run in August 1954 and 2 additional sister ships will be placed in operation in the near future.

Fiscal year 1956.—With the $1 million requested for fiscal year 1956, the initial-phase improvement will be undertaken.

Completed modifications, Mobile Harbor.—Work completed consists of a channel 36 feet deep and 450 feet wide across Mobile Bar; a channel 32 feet deep and 300 feet wide extending from the bay entrance northerly to the mouth of Mobile River; a channel 32 feet deep and 500 to 775 feet wide extending up the river to the highway bridge at mile 4.6; thence a channel 25 feet deep and 3 miles long in the river and Chickasaw Creek, 500 feet wide in the river and 250 feet wide in the creek; an anchorage 32 feet deep, 200 feet wide, and 2,000 feet long at the former United States Quarantine Station of McDuffie Island (formerly Sand Island); a turning basin 32 feet deep, 2,500 feet long, and 800 to 1,000 feet wide, opposite the Alabama State docks; and a channel 27 feet deep and 150 feet wide from the river mouth to Garrows Bend, and thence along Arlington Pier to the bay channel, with 2 turning basins of 27-foot depth. The cost of this completed work is $1,200,000. As a separate military project, the United States, in 1943, dredged Theodore Channel 32 feet deep, extending from the bay channel, about 9 miles below the river mouth, westerly for 4 miles to the bay shore, and provided a turning basin and dock facilities.

Remaining modifications, Mobile Harbor.—None.

Mr. MARSHALL. We would appreciate it if you would give us a brief statement on this project, Colonel.

Colonel ALLEN. Mobile Harbor at the present time is served by a 32-foot by 300-foot channel. The funds requested for this appropriation bill in the amount of $1 million, will permit the initiation of the new modification which is authorized to 40 feet.

It is not proposed within the next several years to complete this modification, to 40 feet.

The funds requested for this year and the funds which would be required for next year would complete the project only to 36 feet. It is not intended to proceed at this time with the completion of the project to 40 feet. The benefit-cost ratio for the initial phase of deepening from 32 feet to 36 feet, and also widening it from 300 feet to 450 feet, is 3.48 to 1.

Mobile Harbor in 1953 had 13 million tons of commerce which compares with that in 1951 of 8.7 million tons.

Mobile has grown tremendously in the last several years in the extent of its waterborne commerce.

Mr. MARSHALL. What is the status of planning for the initial phase?

Colonel ALLEN. The planning of projects of this type is very nominal, "Type" dredging specifications can be used for this work.

Mr. TABER. What sort of bottom is there on this project?

Colonel ALLEN. It is a sand bottom, for the most part, sir, and the work can be done by hydraulic dredge. The outer bar channel would be done by hopper dredge.

Mr. TABER. There is no rock to speak of?

Colonel ALLEN. That is correct, sir.

Mr. TABER. In regard to the outer bar dredging, is the water pretty shallow there?

Colonel ALLEN. No; the bar channel at the present time is being maintained at 34 feet. We have an existing 34-foot project across the bar. It does shoal off to either side at the bar channel.

Mr. TABER. That silts; does it not?

Colonel ALLEN. Yes, sir; there is maintenance dredging required in the bar.

Mr. TABER. Is the bay silt considerable?

Colonel ALLEN. There is some maintenance dredging required in the Mobile Harbor Channel.

Mr. TABER. Is there much of that?

Colonel ALLEN. Colonel Powers, would you have the figure on maintenance dredging at Mobile?

Colonel POWERS. About 400,000 yards.

Mr. TABER. That is not much.

Colonel POWERS. It costs about $60,000.

WARRIOR LOCK AND DAM

Mr. MARSHALL. The next project is the Warrior lock and dam on the Warrior River. We will insert pages 13, 14, and 15 of the justifications into the record at this point.

(The pages referred to follow:)

WARRIOR LOCK AND DAM, ALABAMA (CONTINUING)

Location.—On the Warrior River, 49.6 miles above its confluence with the Tombigbee River, 6 miles southeast of Eutaw, Ala., and 15 miles northeast of Greensboro, Ala.

Authorization.—1909 River and Harbor Act.

Benefit-cost ratio.—1.56 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$18,200,000	
Estimated local cash contributions	0	
Estimated project cost	18,200,000	
Appropriations to June 30, 1954	158,000	
Appropriations for fiscal year 1955	1,800,000	
Appropriations to date	1,958,000	11
Appropriations requested for fiscal year 1956	4,100,000	33
Balance to complete after fiscal year 1956	12,142,000	

PHYSICAL DATA

Dam:
- Type: Rolled-earth fill.
- Height: 71 feet (maximum).
- Length: 1,514 feet.

Lock:
- Size: 110 by 600 feet.
- Maximum lift: 22 feet.

Spillway:
- Type: Gate-controlled, concrete broad-crested weir with stilling basin.
- Capacity (normal pool): 56,000 cubic feet per second. Overbank flow begins at elevation 3 feet above normal upper pool.

Status (January 1, 1955)

	Percent	Completion schedule
Entire project	2	Entire project, October 1957.
Acquisition of reservoir area	7	Land acquisition, January 1957.
Relocations	0	Relocations, April 1957.
Reservoir clearing and demolition of dams 8 and 9	0	Reservoir clearing and demolition of dams 8 and 9, July 1957 and October 1957.
First stage construction including excavation for lock and access road.	17	First stage construction including excavation for lock and access road, July 1955.
Lock construction	0	Lock construction, October 1957.
Second stage construction including dam and spillway.	0	Second stage construction including dam and spillway, October 1957.
Lock approach channels	0	River closure, September 1957. Lock approach channels, October 1957.

JUSTIFICATION

The Warrior lock and dam is a modernization unit in the Tombigbee-Warrior Waterway between Demopolis lock and dam, now nearing completion, and the Tuscaloosa lock. It will replace the obsolete locks and dams Nos 8 and 9, lock size 52 by 285 feet, which were built about 50 years ago, with a modern 110- by 600-foot lock having a maximum lift of 22 feet, thereby eliminating the multiple lockages now required and considerably reducing the time of travel. It will then be possible to handle more traffic in less time with consequent reduction in transportation costs. Reduction of travel time on this waterway is considered to be of great importance from a national defense standpoint, since it will permit the more rapid movement of critical materials along the Tombigbee-Warrior Waterway to and from the highly industrialized steel producing center of Birmingham, Ala. This waterway is vital to the needs of both the producers and consumers of steel in the South, with iron ore from the port of Mobile moving to the steel mills of Birmingham, and steel products from Birmingham moving to the shipyards and other industries at Mobile and along the gulf coast. A terminal to handle iron ore imports from South America, which will amount to 2 to 3 million tons annually, was placed in operation at Mobile, Ala., in January 1954.

A total of 2,857,000 tons of commerce moved over the Black Warrior, Warrior, and Tombigbee Rivers in 1953. Some of the principal commodities were limestone (735,000 tons), rolled and finished stel products (350,000 tons) : iron ore and concentrates (360,000 tons) ; bituminous coal and lignite (188,000 tons) ; crude petroleum (276,000 tons) ; clays and earths (141,000 tons) ; and motor fuel and gasoline (188,000 tons).

Fiscal year 1956.—The requested amount of $4,100,000 will be applied to—

Continue acquisition of land in reservoir area	$408,500
Initiate construction of the dam, including the spillway	460,700
Construction of lock	2,690,800
Engineering and design	170,000
Supervision and administration	370,000
Total	4,100,000

Completion of Warrior lock and dam at the earliest possible time is essential to insure continued movement of traffic over the waterway since the condition of lock 9 is considered very critical. With funds requested for fiscal year 1956, acquisition of the land in the reservoir can be advanced to about 60 percent completion. Construction of the lock will be continued as scheduled. Construction of the dam and spillway will be initiated. Construction must continue as scheduled for project completion by October 1957.

Mr. MARSHALL. Will you tell us about this project?

Colonel ALLEN. The Warrior Dam project was initiated last year, with funds appropriated in the amount of $1,800,000.

The Warrior lock and dam is a replacement structure on the Warrior River which will replace existing locks and dams 8 and 9. It is a part of the modernization program, which we are embarked upon, for modernization of the Warrior River by replacing old and

inadequate locks and dams with modern structures, and with lock chambers of suitable size to accommodate present-day tows.

The present lock chambers of locks 8 and 9 on the Warrior River are 52 feet wide, and 285 feet long.

The replacement structure would be 110 feet wide, and 600 feet long, in order to permit navigation to transit the lock without double locking, as is now the case.

Mr. TABER. Do you mean this project will take the place of another one?

Colonel ALLEN. It replaces two old locks and dams, Mr. Taber, locks 8 and 9, which were built back at the turn of the century, and which are inadequate in size to handle present-day tows.

Mr. TABER. How much traffic do you get on that river?

Colonel ALLEN. Traffic on the Warrior River, in 1953, amounted to 2.8 million tons. It has increased from 2 million tons as of 1948 to 2,857,000 tons in 1953.

This is the second replacement unit in recent years. The Demopolis lock and dam, which replaced locks 4, 5, 6, and 7 has been completed. That lock and dam is now in operation.

Mr. TABER. There is a large cost involved for the benefit received; is there not?

Colonel ALLEN. The benefit-cost ratio is 1.56.

LOCAL CONTRIBUTION

Mr. KIRWAN. Is there any local contribution to this project?

Colonel ALLEN. No, sir; there are no local contributions.

Mr. KIRWAN. None whatsoever?

Colonel ALLEN. No, sir.

Mr. KIRWAN. In other words, it is something like the Delaware River, and the Cleveland projects. It would be mostly for the benefit of the steel plants; would it not?

Colonel ALLEN. There is a sizable movement of iron ore on this river. However, it is not extreme in volume.

Out of the 2.8 million tons in 1953, 360,000 tons were iron ore upbound, and 350,000 tons were steel-mill products downbound.

So, about 700,000 tons of the 2.8 million tons were iron ore and products.

Mr. KIRWAN. I note you have 735,000 tons alone in limestone.

Colonel ALLEN. I was speaking of iron ore and iron-ore products.

Mr. KIRWAN. All of this limestone, I suppose, would go into the steel-plant furnaces?

Colonel ALLEN. Probably, sir.

Mr. KIRWAN. You have 735,000 tons of that, and 188,000 tons of bituminous coal which goes into the making of steel. So, there is practically nothing left for anything else. You have 710,000 tons of iron ore and finished steel, 188,000 tons of coal, 735,000 tons of limestone, and I suppose that the 176,000 tons of crude oil will also go to the plants of the steel mills, as well as clay and earths, and all of those other things.

You would have very little left which does not go into the steel plants.

So, it is just another gift—whether it is on the Delaware River or the Cuyahoga River, or the Warrior River—to the steel plants. I am

not condemning the Army engineers, because they have nothing to do with it. This is the result of an act of Congress.

That is all I have, Mr. Chairman.

DEMOPOLIS LOCK AND DAM

Mr. BOLAND. Is the Demopolis lock and dam already completed?

Colonel ALLEN. That is completed and in operation; yes, sir.

Mr. BOLAND. The Demopolis lock and dam took the place of locks 4, 5, 6, and 7?

Colonel ALLEN. That is correct.

Mr. BOLAND. Is there any reason why you now carry those locks which have been replaced on this particular sketch? I see they are still listed on here.

Colonel ALLEN. No, sir; except to furnish some additional understanding in discussing the overall river projects.

Mr. BOLAND. Locks 4, 5, 6, and 7 are not now there; is that right?

Colonel ALLEN. That is correct.

SOURCE OF STEEL MILLS RAW MATERIALS

Mr. TABER. Does anyone know where the Birmingham steel industry gets its raw materials and most of its coal?

Colonel ALLEN. Some of their iron ore, sir, comes in from overseas and is offloaded at Mobile.

Mr. TABER. Then does it go by rail to Birmingham?

Colonel ALLEN. A part of it goes by rail and a part of it by waterway.

Mr. TABER. Does any of it come from the interior?

Colonel ALLEN. I understand there are considerable lower grade deposits in the vicinity of Birmingham.

Mr. TABER. However, as to whether or not they are used, you do not know?

Colonel ALLEN. I do not know.

Mr. TABER. You could not run much of a steel plant on 350,000 tons of ore, or even double that.

How much depth do you have in the channels now?

Colonel ALLEN. That will be a 9-foot channel, sir.

Mr. TABER. What is it now?

Colonel ALLEN. It is now 9 feet, and this merely replaces older locks and dams.

Mr. TABER. Is it 9 feet all the way up to Port Birmingham?

Colonel ALLEN. Yes, sir.

Mr. TABER. Is there a considerable rise in the river from Mobile up? How much rise is there?

Colonel ALLEN. From Mobile up to the head of the project, sir?

Mr. TABER. Yes.

Colonel ALLEN. There is a 250-foot rise in the project above mean sea level at Mobile, up to lock 17.

Mr. TABER. That is the top, is it not?

Colonel ALLEN. Yes, sir; the highest pool is at lock 17.

It is tidal for nearly the first 100 miles up to the vicinity of lock 1.

Mr. TABER. These locks are being put in for what reason—these new locks?

Colonel ALLEN. The new locks are being put in for several reasons, one of which is the fact that the existing locks were built around 1905 and are now at the point where it is no longer economically feasible to maintain them. The lock chambers are small; they are 52 by 285 feet. They are to be replaced with modern lock chambers of 110 by 600 feet, so that the tows which use this waterway will not have to break their tow and lock through twice in transiting the river.

Mr. TABER. On the Demopolis lock you have a rise of about 20 feet, and in the Warrior lock it is just about the same.

COSTS OF RELATED PROJECTS

Is this river traffic heavy enough to justify the expense which we are going to have to go to? For instance, when you get into this picture, you find that we have already built the Demopolis lock and dam which took the place of three other locks and dams, and you now want to build the Warrior lock and dam, which will take the place of three more locks. The Demopolis lock and dam cost you just about what the others cost you; did it not?

Colonel ALLEN. Yes, sir.

Mr. TABER. In addition, you plan to have another one probably at Jackson?

Colonel ALLEN. One is planned for Jackson; yes, sir.

Mr. TABER. Then you have to have two or three above that at Tuscaloosa?

Colonel ALLEN. Tuscaloosa is complete, sir. The project there took out locks 10, 11, and 12, and that was completed in 1940.

One more lock and dam, No. 13, will replace the present locks 13, 14, 15, and 16.

Mr. TABER. Then you have in the neighborhood of $150 million tied up when you get through; have you not?

Colonel ALLEN. Something less than that, sir. The Jackson project is estimated to cost on the order of $25 million, but that is a very tentative estimate, of course, because no final planning has been completed.

Lock 13 will cost on the same order, and there is a project planned at lock and dam 17 in the amount of $12 million.

So, after the Warrior is completed, it will require something between $68 million to $70 million to complete 3 additional structures.

Mr. TABER. The Warrior lock and dam would add another $20 million, as well as the investment which you have at Demopolis.

Colonel ALLEN. I do not have figures on the cost of the Demopolis lock and dam.

Mr. TOFANI. That amount was about $20 million.

Mr. TABER. At Tuscaloosa you would have about the same.

Colonel ALLEN. I would imagine so, but I do not have that figure, sir.

Mr. TABER. That would be about $120 million in all, would it not?

Colonel ALLEN. Yes, sir.

Mr. TABER. Is there any traffic which would justify any such expenditure as that?

Colonel ALLEN. I would like to explain, sir, how these individual replacements are justified.

The navigation on the Warrior River, of course, has been existing for 50 or 60 years. The locks and dams were built there around 1900 to 1905. If we are to maintaain navigation on the Warrior, these existing locks and dams must either be replaced as individuals, or we must replace them with 1 major structure, and eliminate the need of maintaining 3 structures as opposed to 1.

The replacement cost of these individual structures is considered when we prepare our benefit-to-cost ratio for each individual lock and dam replacement. Also, as a benefit, we must consider the savings in transportation costs which will accrue to the users of the waterway by being able to make a faster trip, and make a quicker turnaround and get more use out of their existing loading plant by the use of, say, 5 or 6 lifts, as opposed to the 17 lockages which originally existed on the river.

All of those factors are considered when the benefit-to-cost ratio for each lock and dam replacement is considered.

Mr. TABER. How far is it from Mobile up to Birmingham?

Colonel ALLEN. It is around 400 miles, sir.

Mr. TABER. What is the amount of your maintenance request at this time?

Colonel POWERS. In fiscal year 1955 the funds to be obligated were $880,000, and the request for fiscal year 1956 is $870,000.

Colonel ALLEN. As we get into deeper and longer pools, some of the maintenance on the smaller pools which now exist will be eliminated, and the maintenance cost will be reduced.

Mr. TABER. Well, not very much.

I think that is all, Mr. Chairman.

TAMPA HARBOR

Mr. MARSHALL. The next project is Tampa Harbor. We will insert into the record pages 20, 21, and 2 2of the justifications at this point.

(The pages referred to follow:)

TAMPA HARBOR, FLA. (34-FOOT PROJECT) (NEW)

Location.—Channel from Gulf of Mexico to Tampa, with interior channels to Port Tampa and the Alafia River Terminal, total length of channels is 53.7 miles.

Authorization.—1950 River and Harbor Act.

Benefit-cost ratios.—Main channels to Tampa and Port Tampa, 2.18 to 1; Alafia River, 2.75 to 1; Tampa Harbor, as a whole, 2.25 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$11,000,000	
Estimated local cash contributions	0	
Estimated project cost	11,000,000	
Appropriations to June 30, 1954		
Appropriations for fiscal year 1955		
Appropriations to date		0
Appropriations requested for fiscal year 1956	977,000	9
Balance to complete after fiscal year 1956	10,023,000	

	Physical data depth (feet)	Length (miles)	Width (feet)
Channels or basins:			
Egmont Channel	36	5.7	600
Mullet Key Cut	34	2.9	500
Tampa and Hillsboro Bay Channels	34	31.5	400
Upper Harbor:			
Sparkman Channel	34	1.1	400
Ybor turning basin	34	(1)	
Port Tampa Channel	34	8.3	400
Port Tampa turning basin	34	.4	750
Alafia River channel	30	3.6	200
Alafia River turning basin	30	.2	700

[1] Irregular shape.

STATUS JANUARY 1, 1955

Not started.

COMPLETION SCHEDULE

Tampa Bay channels, March 1958.
Egmont Channel, March 1957.
Mullet Key Cut, March 1957.
Remaining channels, June 1960.

JUSTIFICATION

Tampa Harbor, the most important port on the gulf coast of Florida, serves a large tributary area. The volume of commerce handled by the harbor has steadily increased from 5,436,202 tons in 1949 to 9,061,058 tons in 1953, a 67 percent increase. Many complaints have been received of the inadequacy of existing widths and depths.

Large tonnages of petroleum products (4,184,781 tons in 1953) for civilian and military use, phosphate (3,104,082 tons in 1953), sulfur, fertilizer, iron and steel articles, grain, fresh and canned vegetables and fruits, forest products, cement and other commodities move in volume through the harbor in modern deep-draft vessels.

Tanker operators state that an average of 10 hours per vessel trip at a cost of about $121 per hour, or about $1,000 net per trip, is lost awaiting high tide at Tampa Harbor. Likewise, operators and agents of the major steamship lines state that an average of 8 hours per vessel-trip at a cost of about $80 per hour or $640 per trip, is lost by their ships awaiting high tide in the harbor. Delays will increase as the volume of commerce increases.

A large volume of fuel now moves between Port Tampa via a pipeline to a tank farm at MacDill Air Force Base, whence it is distributed to other permanent Air Force bases at Orlando and Cocoa Beach, Fla. Current plans include replacing the existing pipeline and the construction of additional tanks for a considerable increase in capacity.

Enlargement of the channels to Tampa and Port Tampa is justified because it will reduce layover time of modern deep-draft vessels and will permit carrying greater loads of petroleum products.

Fiscal year 1956.—The sum of $977,000 will be applied to the most urgently needed work. With that amount, dredging of Tampa Bay Channels, Egmont Channel, and Mullet Key Cut can be initiated and partially completed.

Completed modifications.—Work completed consists of a 30 foot channel (32 feet in Egmont Channel) to Port Tampa (including a turning basin), a 30 foot channel to Tampa, including Seddon, Garrison, Ybor, Channels, and a 12-foot channel at the mouth of Hillsboro River. The cost of completed work is $10,184,000.

Remaining authorized modifications.—No work has been started on remaining authorized modifications estimated to cost $216,000 and consisting of: River and Harbor Act 1945, authorized dredging of a channel 9 feet deep and 100 feet wide in Hillsboro River for about 2.4 miles above the upper end of the existing 12-foot channel, and thence remove obstructions to the Florida Avenue Bridge; and River and Harbor Act of 1954, which extends snagging and clearing in Hillsboro River to the city waterworks dam, a distance of 3 miles.

Mr. MARSHALL. We will appreciate a brief statement on this project.

Colonel ALLEN. This project is a new start. We are not engaged on construction in Tampa Harbor with fiscal year 1955 funds.

The present Tampa Harbor is served by a channel of 30 feet, with 2 feet additional in the bar channels.

In 1950 the deepening of the channels serving Tampa was authorized. The effect of the improvement was to provide 4 additional feet of depth in the channel serving the port of Tampa. This authorization was based upon the need for greater depths to more efficiently serve the navigation requirements of Tampa Harbor.

The tonnage at the time of preparation of the report in 1946 was 3.7 million tons, and in 1953 the tonnage amounted to 9,061,000 tons, an increase of 5.3 million tons since the figures were compiled in the project document.

Forty-six percent of this commerce in Tampa is petroleum products, and 34 percent is the export of phosphate, one of the primary exports of the port of Tampa. The funds requested in this appropriation bill will permit the initiation of work at three locations, the Egmont Bar Channel, the Mullet Key Cut, and the Main Tampa Channel.

If funds are appropriated, 5 months will be required to prepare plans and specifications after completion of probing and boring operations in order to determine the extent of the material to be removed.

Work on the project could be initiated next spring.

Mr. MARSHALL. What are the requirements for local cooperation?

Colonel ALLEN. The local cooperation requirements among other things include the provision, prior to or concurrently with, the Federal improvement of additional or enlarged slips and berthing space, with necessary terminal facilities at the port of Tampa.

The local interests, being aware of the fact that this is in the budget, have already contacted the district engineer at Jacksonville, with a view to determining the exact extent of their local cooperation. Their compliance with the terms of local cooperation seems to be assured, and the district engineer anticipates no difficulty in reaching an agreement with the local interests.

Mr. MARSHALL. What is the status of the detailed plans for this project?

Colonel ALLEN. No planning has been initiated. It will require, from the time funds are made available, until next spring, to complete the necessary boring, and field-survey work to determine the extent of the material to be moved.

Mr. MARSHALL. When was this project authorized?

Colonel ALLEN. In the 1950 River and Harbor Act, sir.

Mr. MARSHALL. Was the benefit-to-cost ratio determined at that time?

Colonel ALLEN. Yes, sir, and it was reevaluated at the time the budget request was made.

Mr. MARSHALL. Now, how much tonnage goes through this harbor annually?

Colonel ALLEN. The port of Tampa in 1953 had in excess of 9 million tons.

Mr. BOLAND. With the enlargement of the channel, is there any estimate as to what the tonnage might be? It was 9,061,000 tons in 1953. How much more would it be when you enlarge the channel? Do you have any information on that?

Colonel ALLEN. Yes, sir; I think I can provide something on that.

It appears that we were very conservative on our estimate of prospective commerce at the time of authorization of this report.

The estimated total prospective commerce was indicated to be on the order of 5.2 to 5 million tons, with an indicated increase, after completion, of 1.6 million tons. You can see from the figures, the tonnages which were considered at the time of the authorization of the project have already been exceeded.

Mr. TABER. What sort of bottom do you have in this harbor?

Colonel ALLEN. For the most part, sir, soft material, but there is some hard material, the extent of which will have to be determined more accurately.

Mr. TABER. You have a distance of 40 miles from the point where you start to Tampa; do you not?

Colonel ALLEN. Yes, sir. It is about 20 miles up to the junction, and, then, before we get up to Tampa, the head of the project, it is another 10 miles.

Mr. TABER. I was just looking at page 20 of the justifications, and it indicates a distance of about 40 miles. It may be more.

You are supposed to have a depth of 30 feet there at this time?

Colonel ALLEN. 30 feet there now, yes, sir; 32 feet in the bar channel, and 30 feet in the main channel.

Mr. TABER. What type of traffic do you have coming into this port?

Colonel ALLEN. A large portion of the traffic is petroleum, sir.

Mr. TABER. That is, however, mostly incoming traffic?

Colonel ALLEN. That is 46 percent of the total, inbound.

Mr. TABER. Your phosphate traffic accounts for 44 percent outgoing, I believe?

Colonel ALLEN. Yes, sir; 44 percent of the total commerce is phosphate, outbound.

Mr. TABER. That is about the story; is it not?

Colonel ALLEN. Then there are additional tonnages of sulfur, fertilizer, and general cargo.

Mr. TABER. Your cost is going to be $11 million. That is quite a large figure.

What tonnage do you anticipate at this place?

Colonel ALLEN. well, at the time of the report, sir, it was anticipated that an additional 1.6 million tons of commerce would be attracted to this port by the completion of this project. However, as I mentioned, the figures which were predicted in the report have already been exceeded.

Mr. TABER. Yes.

What sort of stability is there in connection with these figures?

Do you know anything about the phosphate situation?

Colonel ALLEN. No, sir; I do not know the extent of the phosphate deposits, or what their expected life is.

CHARLESTON HARBOR

Mr. MARSHALL. The next project is Charleston Harbor. We will put into the record at this point pages 26 and 27 of the justifications.

(The pages referred to follow:)

CHARLESTON HARBOR, S. C. (35-FOOT CHANNEL EAST AND NORTH OF DRUM ISLAND) (NEW)

Location.—Channel extending from the intersection of Town Creek Channel and Cooper River Channel south of Drum Island, via Cooper River, to the intersection of Town Creek Channel and Cooper River Channel north of Drum Island, a distance of about 3 miles.

Authorization.—1954 Rivers and Harbors Act.

Benefit-cost ratio.—Not evaluated. Authorization based on relief of congestion and safety to navigation.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$200,000	
Estimated local cash contributions	0	
Estimated project cost	200,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	
Appropriations requested for fiscal year 1956	200,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Channels: Deepening the existing 30-foot channel in Cooper River east and north of Drum Island to 35 feet deep, 600 feet wide, 3.0 miles long.

STATUS (JANUARY 1, 1955)

Channel east and north of Drum Island, not started.

COMPLETION SCHEDULE

January 1956.

JUSTIFICATION

The port of Charleston, S. C., is a deep-water project serving the needs of seagoing commerce, both foreign and coastwise. In 1953, 4,020,000 tons of commerce moved over this harbor. The principal commodity tonnages were motor fuel and gasoline, 816,000; gas, oil, and distillate fuel oil, 467,000; and residual fuel oil, 1,074,000.

Deepening of the existing 30-foot channel east and north of Drum Island is necessary to relieve congestion and alleviate the hazards to navigation in the narrow 35-foot channel in Town Creek. Diversion of vessels drawing over 28 feet from Town Creek to Cooper River will lessen the danger to vessels underway and to vessels moored in Town Creek. Many of the largest ships passing through Town Creek are tankers carrying gasoline, and the hazard of collision is aggravated by the danger of fire and explosion. The cost of deepening the channel is fully justified in the interest of improved safety and convenience to established and prospective navigation by commercial and naval vessels.

Fiscal year 1956.—With the amount of $200,000 for fiscal year 1956, it is proposed to accomplish the entire improvement in order to achieve the maximum in economy and to secure as soon as possible the benefits of a completed 35-foot channel.

Completed modifications.—Work completed under the existing project consists of a channel for commercial purposes 35 feet deep, 1,000 feet wide from the sea to the inner end of the jetties, thence 600 feet wide to Town Creek, thence 500 feet wide through Town Creek, thence 600 feet wide to the navy yard; and thence 400 feet wide to Goose Creek; a turning basin 700 feet wide at the port terminals; a channel 30 feet deep and 600 feet wide in Cooper River east and north of Drum Island; and a channel in Shen Creek 110 feet wide and 10 feet deep to Mount Pleasant. The cost of this work was $1,916,000.

Remaining authorized modifications.—A 40-foot channel to the navy yard was authorized by the River and Harbor Act approved July 18, 1918, as a national-defense measure and is to be prosecuted only as found necessary in the interest of national defense.

Mr. MARSHALL. Colonel Allen, we shall be glad to hear from you on this project.

Colonel ALLEN. The Charleston Harbor is a new start, with 1 year of appropriations requested, to the extent of $200,000.

This appropriation will start and complete the needed improvement in Charleston Harbor, which was authorized in 1954. It will provide, at a cost of $200,000, an alternate channel to the east of Drum Island. That alternate channel will be increased from 30 to 35 feet.

At the present time vessels drawing in excess of 28 feet must pass through this narrow, congested, and restricted Town Creek Channel up to the head of navigation, at the port terminals, and discharge their cargo. Most of the vessels are tankers, and there is hazard in this operation, in transiting this narrow Town Creek Channel, which is now 35 feet.

You will note that there is no benefit-to-cost ratio. It is authorized strictly on the basis of safety, and the relief of congestion.

Mr. MARSHALL. What has been the extent of accidents during the last 5 years, in this harbor?

Colonel ALLEN. There have been no serious accidents because of the fact that the ships do proceed at as slow a speed as they possibly can, or use the outer channel with difficulty. I have no definite information on real serious accidents in the Town Creek Channel.

TONNAGE HANDLED

Mr. MARSHALL. Could you furnish statistics on the tonnage handled by this harbor for each of the last 10 years, and place such information into the record?

Colonel ALLEN. The tonnage for 1953 was in excess of 4 million tons, with 131 ships drawing in excess of 30 feet.

(The information requested follows:)

Annual commerce for Charleston Harbor, S. C.

Year:	*Tonnage*	Year:	*Tonnage*
1944	2,275,500	1949	2,627,100
1945	3,818,000	1950	3,427,600
1946	4,855,500	1951	4,632,700
1947	5,185,700	1952	4,181,700
1948	4,027,600	1953	4,020,100

Mr. MARSHALL. I note on your map that the black mark shows that southwest and west of Drum Island the work on the channel was completed by June 1954.

Is not this channel adequate to handle the tonnage, and why do you keep two channels open?

Colonel ALLEN. The purpose of authorizing the alternate channel in Cooper River was to permit tankers which now have to go up to the head of navigation, where the tank farms are, to use the Cooper River rather than the narrow, restricted Town Creek with its piers and wharves and the attendant development of that area.

Mr. TABER. Why did you not go up that way to start with?

Colonel ALLEN. The port originally developed along the Town River.

Colonel POWERS. I should like to point out, Mr. Chairman, that that black work was completed in 1942, and there has been no new work since 1942 there, sir.

Mr. KIRWAN. What is the width of the channel at this time? Five hundred feet?

Colonel ALLEN. The Town Creek Channel is 500 feet.

Mr. KIRWAN. You are going to widen it to the extent of 600 feet; is that correct?

Colonel ALLEN. The existing project in Cooper River is 30 feet deep and 600 feet wide.

Mr. KIRWAN. The Cooper River and Drum Island is 35 feet by 600 feet wide?

Colonel ALLEN. Yes, sir; that is the authorization.

The existing channel in Coper River is 30 feet deep, and 600 feet wide. This project would deepen it an additional 5 feet with no additional widening.

Mr. KIRWAN. I note from the justifications that you will complete it for $200,000.

Colonel ALLEN. Yes, sir.

Mr. KIRWAN. Do you have easy digging there?

Colonel ALLEN. It is all sand and mud.

Mr. KIRWAN. Two hundred thousand dollars will complete it, and you expect easy going?

Colonel ALLEN. Yes, sir.

FLOOD-CONTROL PROJECT FOR CENTRAL AND SOUTHERN FLORIDA

Mr. MARSHALL. The next project is the flood-control project for central and southern Florida, and at this point in the record we will place pages 31, 32, and 33 of the justifications.

(The pages referred to follow:)

CENTRAL AND SOUTHERN FLORIDA (CONTINUING)

Location.—Central and southern Florida in Kissimmee River Basin and Lake Okeechobee-Everglades-east coast areas.

Authorization.—1948 and 1954 Flood Control Acts.

	Benefit cost ratio
Planned items	5.99 to 1
East coast-Everglades area	5.40 to 1
Lake Okeechobee-Everglades area	6.19 to 1
Kissimmee River Basin	6.97 to 1

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	[1] $117,710,000	
Estimated local cash contribution	[2] 18,407,600	
Estimated project cost	[1] 136,117,600	
Appropriations to June 30, 1954	18,774,000	
Appropriations for fiscal year 1955	4,250,000	
Appropriations to date	23,024,000	20
Appropriations requested for fiscal year 1956	6,300,000	25
Balance to complete after fiscal year 1956	[1] 88,386,000	

[1] The total cost includes only those units of the comprehensive plan for which features and estimates of cost have been firmly established. Costs are not included for the other units of the comprehensive plan.
[2] Computed on interim basis of 15 percent. Subject to restudy in accordance with 1954 act.

Physical data (planned items)

	East coast-Everglades area	Lake Okeechobee-Everglades area	Kissimmee River basin
Levees:			
Total length, miles	135	362	2.
Minimum to maximum height	2 feet to 16 feet	2 feet to 25 feet	2 feet to 7 feet.
Relocations: (railroad bridges) number	10	6	None.
Canals: Miles	106	26	61.
Pumping plants:			
Number of structures	2	7	
Total capacity	1,535,000 gallons per minute.	10,230,000 gallons per minute.	
Floodway control and diversion structures: Number.	21		6.

Status (Jan. 1, 1955)

	East coast-Everglades area		Lake Okeechobee-Everglades area		Kissimmee River Basin	
	Percent complete	Completion schedule	Percent complete	Completion schedule	Percent complete	Completion schedule
Relocations	1	June 1959	0	April 1958		
Levees	33	Not scheduled	6	Not scheduled	0	April 1957.
Channels and canals	16	June 1960	0	do	0	April 1960.
Pumping plants	44	February 1956	21	June 1961		
Floodway control and diversion structures.	18	Not scheduled			0	January 1961.

Planned items 15 percent complete.

JUSTIFICATION

The project, embracing some 15,570 square miles in central and southern Florida, would afford a high degree of flood protection; it would provide for removal of excess waters in wet seasons, and for their control, storage, and use in maintaining water levels during dry periods. The project would, incidentally, provide for preservation of fish and wildlife resources and would reduce the salinity intrusion into land and water supplies of coastal areas. Flooding is recurrent and frequent. The most notable flooding of recent years occurred in 1947 when rains accompanying two hurricanes following an unusually wet season caused flood damages estimated at $59,692,700 in the project area. The planned

works would have prevented a large portion of those damages. Annual benefits estimated for the planned project are:

Area	*Benefits*
East coast-Everglades area	$10,809,400
Lake Okeechobee-Everglades area	26,731,700
Kissimmee River Basin	1,963,700
Total of planned items	39,504,800

The Central and Southern Florida Flood Control District has contributed $3,440,000 toward their share of the project cost and has agreed to continue to cooperate as the work progresses. In addition, the district is advancing $2,900,000 to accelerate the construction program during fiscal year 1955.

Fiscal year 1956.—The requested amount of $6,300,000 will be applied as follows:

EAST COAST-EVERGLADES AREA	
Continue and complete construction of:	
C–9, sec. 4	$316,200
S–9, str.	268,200
S–22	80,800
Initiate and complete construction of:	
S–13A	11,300
L–40 culverts	69,600
Engineering and design, total	1,000,000
Supervision and administration, total	534,800

LAKE OKEECHOBEE-EVERGLADES AREA	
Continue and complete construction of:	
L–12	$323,400
L–14	263,500
L–2	285,400
L–3	401,900
S–2, mach	345,200
S–6, mach	222,600
L–19	232,900
Continue and partially complete construction of:	
S–2, str	541,400
S–3, mach	310,500
S–6, str	326,300
Initiate and partially complete construction of:	
S–3, str	300,000
L–20	240,000
L–6	226,000

Total both areas, $6,300,000.

The construction completed or under way at the beginning of fiscal year 1956 is rapidly affording full measure of protection to the eastern half of the Lake Okeechobee-Everglades agricultural area. L–20 is the remaining feeder canal for pump station 2 which will be operational early in fiscal year 1957. Pump station 3 will provide protection to the Miami Canal area in the western portion of the area. Encirclement of Lake Okeechobee-Everglades agricultural area is continued by the initiation of construction of L–6 for its completion concurrently with S–6, and providing closure of the agricultural area on the eastern side.

S–13A is a water-control structure necessary to divide the flow of the South New River Canal between pump station 13, which was completed in 1954, and pump station 9, which will be completed in fiscal year 1956.

GENERAL STATEMENT

Mr. MARSHALL. Colonel, we would appreciate a statement on this project.

Colonel STARBIRD. Sir, this is a rather complex project, and I can either go to the specific facts assuming that the committee understands the details of the project, sir, or I could take 5 minutes to explain how the various features work, and what the project will do. What course, Mr. Chairman, would you like me to take?

Mr. MARSHALL. I believe that it would be well if you gave a brief statement of it for the benefit of the committee.

Colonel STARBIRD. Sir, this project is a cooperative project between the State of Florida, the local people there, and the Federal Government.

It is a project which was authorized in part by the 1948 Flood Control Act. Then, the 1954 Flood Control Act followed, and authorized the project as a whole.

The project is one for flood control, for major drainage and to some extent for the conservation of water. The area concerned is one about 200 miles long along the east and central part of the peninsula of Florida. The area overall in its widest portions is approximately 100 miles wide. The total area concerned is 15,570 square miles.

Lake Okeechobee, a natural lake, rises roughly in the center of the project. The most pronounced physical characteristic of the area is the lack of clear topographic definition.

To explain, this lake stands normally at an altitude of about 16 feet only above sea level, and yet the center part of the lake is about 50 miles from the coast. This river which drains into Lake Okeechobee, the Kissimmee River, is nearly 100 miles long, and yet the headwaters of that river stand at only about 60 feet above sea level.

LAND AREA

Basically, the land area of the project breaks down into four parts: First, there is the heavily developed 100-mile-long east coast area, averaging from 20 miles to 30 miles wide, with a finger of the Everglades extending northeastward adjacent to the area. In this area the main threat in the past has been the blowing in of waters from hurricane-driven downpours upon the Everglades.

The second area is one which I have overlaid in white on this map, and consists of an area of 1,100 square miles, bounded on the south by the Everglades and on the north by Lake Okeechobee. This is an area also threatened by water driven in from the south during hurricanes, and by waters driven out of Lake Okeechobee southward into this highly developed agricultural area. One storm, that of 1928, killed 2,300 people in this area as a result of water being blown into the area out of Lake Okeechobee. All of the parts of the project for your consideration today are in these 2 areas, and I will name only the other 2 of the 4 areas concerned in the project.

The third area is the Kissimmee Valley, a long, flat valley, which I have already mentioned, and the fourth area is the St. John's area. That is a near-coastal area drained by the St. John's River, running north to Jacksonville.

The authorized project in this area, sir, the areas of concern to you today, and first on the east coast, consists of a longitudinal levee about 100 miles long to block the blowing in of water from the east. That levee is completed already to interim grades.

Also, in this area, the improvement of certain canals constructed by certain local interests to drain out excess water, forms a conservation pool, and this finger of the Everglades is between the two built-up areas.

In the agricultural area the problem is more complex. We had to be able to drain off surplus water from the lake, and local interests have constructed already four canals running north to south, basically, and those canals need further improvement. Also needed is a protective levee around the south flank to block water that might be blown in from the south and southwest. Finally, along the lake, improvement of existing levees is needed.

PROGRAM FOR FISCAL YEAR 1956

The program for fiscal year 1956 is based upon a Federal appropriation of $6.3 million. The local interests will pay in cash toward the work 15 percent of the overall amount, or something in the neighborhood of $1 million.

In addition, local interests will furnish the lands, rights-of-way, and relocations.

With the funds concerned, we shall complete one short section of canal here in the east-coast area at an estimated cost of $316,000. We shall complete 1 pumping plant underway that is to lift water from a canal into the conservation area, at a cost of $268,000.

In the agricultural area, we have already accomplished the work shown in black. In other words, we have started a pincers movement of the flanking, protective levees.

During fiscal year 1956 we would continue on the west flank of the levee, with expenditures of $687,000, and on the east flank, we would continue with expenditures of $226,000. We would also complete two of the north-south drainage canals, and we would continue work on a third.

Two of the four north-south canals would not be completed in fiscal year 1956. In order to take care of excess water which falls in the area, pumping plants are needed at the locations shown by the circles. One pumping plant has already been completed. Two pumping plants would be continued with fiscal year 1956 money on the lake side of the project. One other would be continued to completion on the lower side of the project.

The overall benefit-to-cost ratio of the project is not yet available because certain elements of the project have not yet been as they planned, but for the planned elements, roughly 40 percent of the total of the project, the benefit-to-cost ratio is 5.99 to 1.

NAVIGATION

Mr. MARSHALL. There is no navigation involved in this?

Colonel STARBIRD. Two important channels, sir, subject to improvement, in later phases of the work are used now, and authorized for navigation.

They are the Caloosahatchee River, and the St. Lucie Canal.

There is actually a waterway through the peninsula using those two channels and Lake Okeechobee, sir.

AUTHORIZATION

Mr. MARSHALL. When was the authorization for this project passed?

Colonel STARBIRD. The first authorization was in 1948, sir, immedi-

ately after the great hurricanes of 1947, hurricanes that caused damage of around $60 million. That authorization was only for what was termed to be the first phase of the project.

Mr. MARSHALL. That was done on the basis of flood control; was it not?

Colonel STARBIRD. It was under a Flood Control Act, sir; that is correct.

The second authorization was given by this last omnibus bill, the Flood Control Act of 1954, and in that act the entire project was authorized.

RECLAMATION

Mr. MARSHALL. It would appear in listening to your discussion that a good proportion of the work being done in this particular area is for reclamation purposes.

Colonel STARBIRD. For major drainage, and not irrigation, sir. As I mentioned, water conservation is secondary.

Mr. MARSHALL. I appreciate your informing me of that, but what I meant was that it would be bringing land into useful production?

Colonel STARBIRD. That is correct, sir, and that was recognized at the time the project document was prepared.

Based upon the formula used in developing the allocation of cost at that time, the recommendation was made that a total of approximately 39 percent of the overall cost of the Federal project be borne by the local people.

In approving the first phase of the work, that formula was used.

Mr. MARSHALL. Do you feel that in view of the benefits to the local communities in bringing this land in production, that 39 percent of the cost which they are bearing is a fair share?

Colonel STARBIRD. It was, Mr. Chairman, a fair share, based upon the calculation at that time, sir.

This latest Flood Control Act, in approving the remainder of the project, the last portions which I mentioned or about three-fourths of the project, provided that since plans had not been developed for the overall project, the Corps of Engineers would recommend to the Bureau of the Budget and to the Congress a revised basis of contribution for the remaining portion of the project when such plans would permit. It specified that any parts of the latter phases of the project undertaken prior to congressional consideration and prior to acting on a new basis, would temporarily follow the old formula, but with a proviso that there would be a readjustment to follow the new formula after that new formula was established, sir.

Mr. MARSHALL. How nearly are we approaching the time when the new formula will be established?

Colonel STARBIRD. It will be about December 1956 before we can complete the overall planning for the remaining phases of the work, sir.

LOCAL COOPERATION

Mr. MARSHALL. Up to this time have the requirements for local cooperation been met?

Colonel STARBIRD. They have been fully met, sir. In fact, this committee and the Senate committee recommended last year that we accept an advance from the local people beyond their share to that

date, an advance of about $2.9 million, so as to expedite the progress on the project. That money has been given us and has been committed.

Mr. MARSHALL. I am not in any way critical of the Corps of Engineers in carrying out the work that has been delegated to them, by the Congress, but I am somewhat amazed to find that we have the Congress approving a project which to me smacks entirely of drainage, when States like my State have never had one penny of assistance from the Federal Government in that regard.

Mr. KIRWAN. I join in what the chairman of the committee says. How much Federal land do we have there?

Colonel STARBIRD. I beg your pardon, sir?

Mr. KIRWAN. How much Federal land is there?

Colonel STARBIRD. I am not certain. There is a great deal of Federal land—I cannot give the acreage, sir—down toward the Everglades area. A part of the control through conservation will be to spill that water through the Everglades area in a reasonable manner. There is also a major airbase near the city of Homestead.

Mr. KIRWAN. Let us consider the Shasta Dam, which is scattering water all over California, as well as power. That cost hundreds of millions of dollars, but every dollar will be paid back to the Federal Government.

Here we have a place where after it is drained we are going to have the finest spot in the world. There will be no place to equal it. One acre of that land will sell for an enormous amount of money.

I am not thinking of the Government land. I am in favor of improving that land. However, a few acres of that private land will be worth a fortune.

I think it is a problem for the State of Florida. The other States have reclamation projects. As was just stated, very little money is dumped into Ohio, which is about the fourth ranking State in the Union in paying taxes. Very few dollars are dumped out there.

I have gone over this list, project after project, and I see all of the things we are putting in. I am in favor of this improvement. I am in favor of improving every foot of this Nation's land. I am not blaming the Army engineers for the way some of these projects are financed. I would like to see the engineers spend $3 billion a year on this country. However, I do say that the States should spend a proper amount. It does not seem fair that they spend $18 million and, judging from the listing we have here, we spend $117 million. Then it is turned over to Florida. With the Federal land we are also going to make a showplace, a park to encourage more tourists to come to Florida.

Colonel STARBIRD. Perhaps I could explain a little further, sir, on the details of contribution.

The total cost for the Federal portion of the work now planned is estimated to be about $118 million, and the total cost to the local interests is much greater than the 15 percent of that cost. The 15 percent they will pay in cash amounts to $18.5 million. The lands, rights-of-way, and relocations will also be paid by them, at $11,825,000. They will take care of the maintenance and operation at about $1,260,000 per year. And most important among other items, sir, they must put in all of the secondary canals, secondary pumping stations, and even secondary levees; and those are estimated to cost them $41.7 million.

Mr. KIRWAN. But you are describing the area down the coast, Miami and Fort Lauderdale and other places along there. There must be a billion dollars in real estate alone there. This is the thing that is going to save them, not even considering the drainage.

What did you say the square-mile area was?

Colonel STARBIRD. 15,000.

Mr. KIRWAN. 15,000. Draining that will make a paradise, which is what you might say this is going to be. I am in favor of making it, and I would like to go there myself; but I would like to see the State of Florida put up their fair portion.

I am not condemning the Army engineers. They are just doing what the Congress put out for them to do.

The Army engineers is the one group that can carry the project to completion, but they are not getting the cooperation of the State of Florida they should have on a project like that. There is no doubt but that when this gets through it will be much like the Central Valley project.

We have men here from the Interior Department. What was the original cost of the project?

Mr. LARSON. It would run about three-quarter billion dollars.

Mr. KIRWAN. The original cost, not the final cost.

Mr. LARSON. About $170 million.

Mr. KIRWAN. Before the project is completed it will be three-quarter billion dollars?

Mr. LARSON. That is correct.

Mr. KIRWAN. Before this project is completed it is easily going to be more than that. That goes for them all.

That is all, Mr. Chairman.

Mr. MARSHALL. The colonel has told us that we have this date when they are going to reevaluate the division of costs, and certainly we can indicate to them very strongly something more has to be done by the State.

Mr. KIRWAN. Nobody is going to adequately evaluate what the real estate is gong to sell for. It is going to be up in the billions of dollars. If you go down there to try to buy a lot after this is made into a paradise, there will not be any real-estate men down there who will sell you a lot for what they now estimate values to be.

Mr. BOLAND. It appears to me that the Federal Government is subsidizing the development of Florida here.

In any event, when did this project first start?

Colonel STARBIRD. Construction, I think, started in 1950, sir.

STORM DAMAGE

Mr. BOLAND. 1950. The most severe storm or hurricane they had occurred in 1928, when there was that great loss of life and property. Why did the Federal Government not move in then? Was there not anything done immediately after that particular storm?

Colonel STARBIRD. There was, sir. There were levees put in south of Lake Okeechobee to a lesser grade than is deemed needed in the area. Those levees are there at the present time. The existing project contemplates improving them.

Mr. BOLAND. Then when did the next hurricane or storm which caused great property damage occur?

Colonel STARBIRD. There was one in 1934 that caused $3½ million damage, sir.

There was one in 1945 which caused $16.3 million damage.

There was one in 1947 which caused $60 million damage. That was the most disastrous one. Actually there were two great storms that year. That was the year that preceded the authorization of the project.

In 1948 there was another storm which caused $50 million damage. From 1949 to the present there has been further damage, flood damage in all cases, in the amount of $80 million.

Mr. BOLAND. Is not most of this damage caused by hurricanes?

Coloned STARBIRD. It is caused by either hurricanes or unusually severe rainy periods when the water does not run off rapidly enough, sir.

Mr. BOLAND. But more damage is caused by hurricanes than by flooding of the rivers, would you not say?

Colonel WHIPPLE. It is the hurricanes that cause floods.

Mr. BOLAND. The hurricanes cause floods?

Colonel STARBIRD. Hurricane condition, sir, leads to excessive water, normally.

Mr. TABER. The water is washed in from the sea on the tidal waves.

Colonel STARBIRD. Not from the sea, sir. It falls from the Everglades or actually falls in or above the areas concerned, such as the Kissimmee.

Mr. TABER. I was down there a few days after the hurricane in 1947 and they showed it to me. That is why I said what I did.

Mr. BOLAND. I have no more questions. I am just overwhelmed by this.

LAND VALUES

Mr. TABER. I was looking at that patch on the map. How much of the land under that patch is the property of the Federal Government?

Colonel STARBIRD. I believe very little of that area, sir.

Mr. TABER. That and the land directly to the northeast of it and around the lake is the land that will primarily be benefited by the operation, is it not?

Colonel STARBIRD. No, sir. There is benefit to the east coast area—to the levee we have constructed. That area, as you mentioned, is one of the great areas benefited, but then the Kissimmee and St. Johns are, too, sir.

Mr. TABER. All the way through that territory that land will be enhanced in value, will it not?

Colonel STARBIRD. That is correct, sir.

Mr. TABER. It runs up from maybe $4 or $5 an acre to presently where they are getting as high as $300 or $400; is that not right?

Colonel STARBIRD. I think that the $300 or $400 is right, sir.

Mr. TABER. Before the floods it was somewhere around $3 or $4; not very far from it.

Mr. KIRWAN. Let me interrupt there, Mr. Taber. I would certainly like to get an acre of it at $300, after this is completed. It would be worth $3,000. Once this is put in, if you could get it for $3,000 an acre you would be getting it cheap, anywhere in that area that comes down the St. Johns River, Jacksonville, and all the way to Miami.

Excuse me for interrupting, Mr. Taber.

STORM DAMAGE

Mr. BOLAND. Where is the greatest loss to life and property?

Colonel STARBIRD. The greatest loss of life is in the white area, sir.

Mr. BOLAND. Why can we not concentrate there? Why develop this other area? That is the most important part of Florida.

Mr. KIRWAN. The State of Ohio had a severe flood at Dayton in 1913. It was up to the tops of the roofs of the houses. Did the Federal Government put in one dime?

Mr. BOLAND. On flood control I imagine they did.

Mr. KIRWAN. They put nothing in. The city of Dayton built three dams at a cost of $50 million.

Mr. BOLAND. The Federal Government must have spent some money in Ohio.

Mr. KIRWAN. Certainly they have spent some money in Ohio, but I am speaking of the one city of Dayton. Here we are picking out a part of Florida where it is said there is going to be damage. I am in favor of the Federal Government undertaking a project like this, but not in favor of going in unless the State of Florida is paying the biggest portion of it.

Mr. BOLAND. In the white-patched area the damage is caused by floods, or most of the damage; is that right? Is it floods or hurricanes?

Colonel STARBIRD. It is due to the water being blown into the area or falling into the area and not getting out fast enough.

Mr. BOLAND. If that is the area where the greatest damage occurs it seems to me that is the area we ought to protect, since the Federal Government has assumed the responsibility for protecting the lands and people against floods. I do not know that we have assumed any responsibility as to protecting the lands and the people against hurricanes. At least we have not in New England, to any great extent. We do not get money for flood control up there for the hurricanes.

DIVISION OF COSTS

Mr. TABER. There are a good many acres involved in this. The crop potential is quite substantial. The value of the acreage, both for recreational purposes and for crops, is going to be enhanced very decidedly as a result of this operation. It would seem to me that the proper approach ought to be that this land should and could, without assuming a terrific burden, pay for the entire cost of the Federal salvage operation on it.

I would think that the Corps of Engineers should have figured out a way to cover it. Frankly, I am inclined to believe that the committee ought to figure out a way, if we want to go ahead with this enormous project. It will cost a couple of hundred million dollars before we get through.

I do not want to stand in the way of progress. On the other hand, I believe we will have better progress if folks pay for what they get, the same way they do if they come up to my territory and buy a farm and the same way they do most places. I am wondering what the engineers have to say on that subject.

Colonel STARBIRD. In the original recommendation, Mr. Taber, sir, we followed the principles or practices of the Reclamation Bureau as closely as we could in recommending a division of cost.

Let me explain that, sir. We took the total cost of the project to include the construction, the lands and capitalized maintenance and operation, and we divided it into two parts. First was the part that we believed attributable to flood control and navigation. That part we recommended that the Federal Government bear.

Mr. TABER. What do you call a flood? If you are going to call a flood everything where an area is saturated with water all the time that is one thing, but if you are going to call something that comes up occasionally as a result of an unusual storm a flood that is another thing. Now, most of this land was saturated with water in such a way that it could not be used at all when this project was started. That is the picture.

If you feel that the Federal Government should take care of floods that is one thing. To my mind it depends upon what you call a flood. If you call a flood something that is there all the time, I do not go along with it.

Mr. MARSHALL. What you are saying is that the water table was so high that the land was unproductive, regardless of what happened.

Mr. TABER. All the time, yes.

Mr. MARSHALL. Now, because of this hurricane they are coming in and putting in protection against the hurricane, which has some effect on lowering the water table.

Mr. TABER. That is just the story.

Mr. MARSHALL. Where do we draw the line in determining what is to be done for protection from hurricanes and what is to be done from the standpoint of reclaiming land?

Mr. TABER. That is just the question.

Colonel STARBIRD. The east coast area was in use, sir, and a part of the area south of the lake was in use. The Kissimmee and the St. Johns were in use, but not as great use as could occur if the project were developed.

We considered all the benefits that would accrue due to the putting in of the project. We estimated that activity that would not develop normally. That was enhancement from the project. For the enhancement part of the project's cost we divided the cost into two parts. For the enhancement portion we recommended that 40 percent of the cost be carried by the Federal Government and 60 percent be carried by local interests.

Mr. BOLAND. Why not 100 percent by local interest on the enhancement part of it, and have the Government take care of all the flood control?

Colonel STARBIRD. The flood control here and the drainage are interrelated in the sense that the structures which take care of one generally take care of the other. The general policy in reclamation, I believe, follows a breakout substantially like that with respect to repayment in cases where local interests furnish the maintenance and operation.

The current policy, incidentally, with respect to local contribution toward the enhancement portion of a project, is that 50 percent of the cost will be borne by the local interest and 50 percent will be borne by the Federal Government.

I think, that this follows closely the actual repayments as made under the irrigation policy for reclamation, in the sense that those

repayments are made in installments without interest. There is a member of the Bureau here. He can probably clarify.

Mr. KIRWAN. You mean the Bureau of Reclamation?

Colonel STARBIRD. Yes, sir.

Mr. KIRWAN. The Flood Control Act and Reclamation are just as you stated, Colonel. The Federal Government looks after that. That is taken out of the project—the cost of the flood control and benefits of recreation and things like that. All of those benefits are taken out. But the rest of the project, which is the major part of it, whether it be on a farm or wherever it is, is paid back to the Government with 3 percent interest.

Colonel WHIPPLE. Not for reclamation, sir. They do not pay back with interest.

Mr. KIRWAN. What is that?

Colonel WHIPPLE. For reclamation projects, sir, they do not pay back with interest. They pay the investment back in 40 payments without interest. That is the comparison Colonel Starbird made.

Mr. KIRWAN. Part of it comes back with interest.

Mr. LARSON. That would be the power investment.

Mr. KIRWAN. The power investment is a large portion of the investment made in the dams. They pay that back with interest, do they not?

Mr. LARSON. On the power allocation, yes.

Mr. TABER. There is no power here.

Mr. KIRWAN. Here there is no power. I am talking about the Reclamation projects.

LAND VALUES

Down in the Coachella Valley what is the land worth an acre?

Mr. LARSON. The production runs pretty high. I suppose it is two or three thousand dollars.

Mr. BRENNAN. Five or six years ago, sir, it was up to $2,000 an acre.

Mr. KIRWAN. $2,000 an acre. That is not nearly the paradise that this is going to be. This is the only place in the world that will have palm trees in the front yard and steamboats in the back.

Mr. TABER. That is the situation we are trying to solve.

Mr. KIRWAN. That is the situation we are trying to solve.

There is no power down in the Coachella Valley. Surely they do not pay for power, but they pay back every dime to the United States Government.

What is the difference whether you have too much water here or are down on a desert and you are burned up by the sun with no water? There is no difference. You cannot raise anything in Florida under water, and you cannot grow anything down in Arizona where you have no water.

That is the point I make.

Mr. MARSHALL. If I am reading these figures correctly, we have made a Federal appropriation to date of $23,024,000. The request this year is for $6.3 million, which leaves a balance for the Federal Government to pay on this project of $88,386,000, which is by far the greatest proportion of the total.

As I understand, Colonel Starbird, before we go very much further there will be a reevaluation of the formula for the division of costs and a recommendation will be made in December of 1956.

Colonel STARBIRD. That is correct, sir. It does not affect the original so-called first phase as I explained. That was fixed earlier. But when the Congress authorized the overall project they left the provision that there would be a reassessment and rerecommendation of the contribution for later phases of the project.

Mr. MARSHALL. We are going to have a reassessment in December. We are under commitment to do certain things in this initial stage. Will this $6.3 million requested for 1956 all be required to meet the obligation that rests with the Federal Government for the first phase?

Colonel STARBIRD. All of this will be applied to work that was in the initial first phase. It will not complete the first phase.

Mr. MARSHALL. So there will be additional funds required over the $6.3 million to get us to the completion of this first stage?

Colonel STARBIRD. That is correct, sir.

Mr. MARSHALL. How much would you estimate it would require to get us through this first stage?

Colonel STARBIRD. The estimate last year of the first phase, before the later phases had been approved, was $96 million, roughly $97 million. There have been changes in that to revise it downward sowewhat.

Mr. MARSHALL. Are there any other questions?

JIM WOODRUFF DAM

The next project is the Jim Woodruff Dam. We will insert in the record pages 42, 43, and 44 of the justifications.

(The information is as follows:)

JIM WOODRUFF DAM, FLA. (CONTINUING)

Location.—On Apalachicola River, 107.6 miles above the mouth, 0.2 mile below the confluence of the Chattahoochee and Flint Rivers in Jackson and Gadsden Counties, Fla., and Decatur County, Ga.

Authorization.—1946 River and Harbor Act.

Benefit-cost ration.—1.05 to 1 for Apalachicola, Chattahoochee, and Flint Rivers project, of which Jim Woodruff Dam is an integral part.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$46,379,000	
Estimated local cash contributions	0	
Estimated project cost	46,379,000	
Appropriations to June 30, 1954	38,763,000	
Appropriations for fiscal year 1955	5,000,000	
Appropriations to date	43,763,000	94
Appropriations requested for fiscal year 1956	920,000	96
Balance to complete after fiscal year 1956	1,696,000	

PHYSICAL DATA

Dam:

Type: Concrete gravity
Height: 67 feet (maximum)
Length: 6,150 feet

Spillway:
Type: Concrete fixed-crest, 1,584 feet long and gate-controlled concrete weir, 760 feet long with stilling basin
Capacity: The combined spillways have a capacity of 252,000 cubic feet per second

Reservoir capacity:	*Acre-feet*
Power	37,000
Minimum pool	348,000
Total	385,000

Power installation:
Initial and ultimate: 3 units, at 10,000, total, 30,000 kilowatts.
Nominal head: 26.5 feet
Lock:
Size: 82 x 450 feet
Maximum lift: 33 feet

STATUS (JANUARY 1, 1955)

Entire project: 80 percent.
Land acquisition: 99 percent.
Relocations: 85 percent.
First-stage construction including the fixed-crest spillway, the lock, and part of the overflow dike: 100 percent.
Reservoir:
Clearing: 99 percent.
Grouting and drainage: None.
Second-stage construction, including the gated spillway, powerhouse, and switchyard: 60 percent.
Procurement of three 14,000-horsepower turbines, three 10,000-kilowatt generators, transformers, three governors, and associated accessory electric and miscellaneous powerplant equipment: 95 percent.

COMPLETION SCHEDULE

Entire project: January 1957.
Land acquisition: June 1955.
Relocations: April 1955.
River closure in April 1954 and lock placed in temporary operation in May 1954
Reservoir:
Clearing: July 1955.
Grouting and drainage: January 1957.
Power on line:
1st unit: August 1956.
2d unit: October 1956.
3d unit: December 1956.

JUSTIFICATION

Jim Woodruff Dam is a multiple-purpose navigation and power project on the Apalachicola River just below the confluence of the Chattahoochee and Flint Rivers. The reservoir formed by construction of this project will extend about 47 miles up the Flint River, and will provide navigation to Bainbridge, Ga., on that river. The reservoir will also extend about 52 miles up the Chattahoochee River and will provide navigation to Columbia, Ala., on that river. It will constitute a link in the canalization of the Apalachicola River, Chattahoochee River, and Flint River, which will provide 9-foot depth navigation channels to Columbus and Bainbridge, Ga. On the Chattahoochee River to Columbus, Ga., the depth of the present channel is about 3 feet; and on the Flint River to Bainbridge, Ga., the depth of the present channel is about 2.6 feet. This project, as the initial step in the development of the Apalachicola River system, will add and additional transportation facility which will greatly assist in relieving the transportation problem in time of war, and will also provide a large block of power in an area where it is urgently needed. The reservoir will also be accessible and available for public use to a large portion of the population of south Alabama, south Georgia, and north Florida.

Fiscal year 1956.—The requested amount will be applied to continue construction of gated spillway and powerhouse, $920,000.

Jim Woodruff Dam should be completed as soon as possible in order to supply power to an area where it is urgently needed. With the funds requested, the entire project will be continued as scheduled to place the first power unit on the line in August 1956. Subsequent units are scheduled to be placed on the line in October 1956 and December 1956.

GENERAL STATEMENT

Mr. MARSHALL. We would appreciate a statement from you on this project.

Colonel WHIPPLE. The Jim Woodruff project, sir, on the Apalachicola River at the junction of the Chattahoochee and the Flint Rivers was authorized in the 1946 Rivers and Harbors Act as a part of the multiple-purpose plan for the improvement of the Apalachicola and Chattahoochee and lower Flint Rivers for navigation, power, and other purposes.

The estimated Federal cost of the Jim Woodruff project s $46,379,000, which is the same as we reported to you last year. There have been some construction difficulties which have caused additional costs which, however, still can be held within the overall cost on account of savings in other components.

We have had to delay the completion date of this project and we now do not expect to get power on the line in the first unit before August 1956, which is a delay of something over a year from the figure we previously gave you. However, the amount of power involved is relatively slight, this project being more important for navigation than for power. The installed capacity will be 30,000 kilowatts.

The anticipated traffic will include barge traffic from the Intercoastal Waterway and the gulf up the Apalachicola, the lower part of the Flint River above this dam, and over 150 miles up the Chattahoochee to Columbus, Ga., which will be the head of navigation under the existing authorization.

The flows on this portion of the Chattahoochee River will be increased—both for power and navigation—by the Buford project further up the river near the headwaters.

BENEFIT-TO-COST RATIO

Mr. MARSHALL. I believe that 2 years ago you estimated the benefit-to-cost ratio at 1.21 to 1. Last year it was estimated at 1.16 to 1. And it has now dropped to 1.05 to 1.

Colonel WHIPPLE. Yes, sir.

Mr. MARSHALL. What is the reason? Is it going down below 1 to 1 next year?

Colonel WHIPPLE. No, sir. I am quite sure that it will not. The reason for the reduction is that we have changed our basis of evaluating benefits and costs for both power and flood control.

The greater change is the one that has occurred since last year in the power benefits. We have taken cognizance of the tax situation in comparing Federal to private power. In all of our power projects this year we have added in computing our benefit-to-cost ratio, to the cost of the project, the taxes that would be paid by private

utilities if they were to build capacity to handle this load. So for this and other projects involving power there has been an indicated considerable reduction in benefit-to-cost ratio, although the estimate of the amount of power to be produced is the same.

NAVIGATION BENEFITS

Mr. MARSHALL. According to the planning report you estimate the navigation benefits at $2,451,000. This is an increase of 25 percent over the $1,935,000 estimated last year. On what do you base this 25-percent increase?

Colonel WHIPPLE. Sir, we have had to make a very thorough reanalysis of the navigation benefits of the Chattahoochee River system. We had been carrying the old figures for some time, and we have made a complete reanalysis and resurvey and estimate of the traffic. It is now estimated that 1,227,000 tons will be the traffic to be anticipated on this river system when these projects are completed; that is, the authorized projects of not only the Jim Woodruff but Fort Gaines and Columbia, which are not yet started.

That is more than twice the traffic that had previously been computed, which was an old estimate some years ago and it does not correspond to the industrial growth of this entire region. On the basis of this new estimate the navigation benefits were increased accordingly.

POWER

Mr. KIRWAN. You say the power will be ready to come in this year?

Colonel WHIPPLE. No, sir; unfortunately not. We previously testified it would be, but on account of the construction difficulties the first unit will come on the line in August of 1956.

Mr. KIRWAN. It will not be on until a year from this August?

Colonel WHIPPLE. Yes, sir.

Mr. KIRWAN. You think at all times you will have enough water behind that dam and reservoir to keep that powerplant going?

Colonel WHIPPLE. Not to keep it going at full strength, sir, but it will generate its proportionate share in the system. We have made the assumption for all these projects based on estimates of flow in drought years and have computed the primary energy. I will give you the computed figures on that in just a second.

We credit the project, sir, with 16,500 kilowatts of dependable capacity and 144 million kilowatt-hours of primary energy, annually, whereas the average annual energy will be 212 million kilowatt-hours. So we will give it credit with only slightly more than half of the installed capacity as the dependable capacity on account of river conditions; and about three-fourths of the average annual energy will be primary energy which will be available even during droughts.

Mr. KIRWAN. How long do you think it will take the Federal Government to get enough money out of that power to repay the investment if you are not going to be able to produce at capacity?

Colonel WHIPPLE. Sir, that was the basis on which all of these economic estimates were made. We based our economic studies on the amount of power we can reliably obtain from the project, and not on the installed capacity. It will take the full 50 years for the Government to get its money out of this project, sir. It is not one of the

projects where you could readily accumulate a surplus, as we have in certain parts of the country.

Mr. KIRWAN. It probably would have been much better if they had just gone ahead with the navigation and flood control and left the power end out of it. Do you not think it will be a very, very expensive investment?

Colonel WHIPPLE. The power investment, sir?

Mr. KIRWAN. Yes.

Colonel WHIPPLE. It is a relatively expensive investment because it is one of the lowest head projects we have in our program.

Mr. KIRWAN. I think you would have been just as well off to eliminate that at the start as to go in and invest that money. When the drought years come along you may get nothing out of this. It will be an expense with no income.

Colonel WHIPPLE. Sir, I am sure that will not be quite the case. The anticipated revenues for this are substantial, even though it is a relatively small power investment.

Mr. KIRWAN. You said it would take all of 50 years to get the investment back?

Colonel WHIPPLE. It will take 50 years.

Mr. KIRWAN. With good going it is going to take that.

Colonel WHIPPLE. Yes, sir; that is right.

Mr. KIRWAN. If it is not good going you can add 10 more years onto that.

Colonel WHIPPLE. Sir, we should not anticipate an indefinite continuation of the recent drought conditions.

Mr. KIRWAN. No; but the future will not all be rosy, either.

Colonel WHIPPLE. No, sir.

Mr. KIRWAN. I think it was on too thin ice that the Jim Woodruff power project was put in. It would have been much better if Florida had developed it. The State should have developed it, if it should have been done at all.

The Government is not thinking of building any transmission lines, is it?

Colonel WHIPPLE. No, sir.

Mr. KIRWAN. Who is going to handle that power?

Colonel WHIPPLE. The Southeastern Power Administration.

Mr. KIRWAN. I understand they will handle it. What utility will it be?

Colonel WHIPPLE. Sir, when I say that they are not contemplating lines, I am speaking outside of my own authority.

Mr. KIRWAN. Yes.

Colonel WHIPPLE. I had not heard that they were, but I think they should testify directly on how they will market the power.

Mr. KIRWAN. That is all, Mr. Chairman.

STATUS OF PROJECT

Mr. BOLAND. There only remains about $2.6 million for the total completion of the project; is that not so? That is all it would cost. You have had appropriated to date $43,763,000 and you are asking $920,000 for fiscal year 1956.

Colonel WHIPPLE. Yes, sir.

Mr. BOLAND. Which leaves a remainder of $1,696,000.

Colonel WHIPPLE. Yes, sir.

Mr. BOLAND. That is $2.6 million, roughly. It will be completed with that amount.

Colonel WHIPPLE. Yes, sir.

CLARK HILL DAM

Mr. TABER. Awhile back you told me that there was an installed capacity of 280,000 kilowatts in the Clark Hill setup. You also told me that there was 528 million kilowatts produced last year and that something in the neighborhood of $2.6 million was realized. How much of the year was it operating? Was it all through the year?

Colonel WHIPPLE. Yes, sir; but not entirely at its full capacity.

Mr. TABER. I figured it out, and it produced, out of the 280,000 kilowatts, an average of 60,250. That is not very far from the mark. With a cost of $78½ million, when you figure depreciation in 50 or 60 years, you are not going to be able to earn enough out of it to pay the interest on the money. I am wondering: Is this Jim Woodruff job any better?

Colonel WHIPPLE. Sir, the Clark Hill project in our information will very readily pay out the investment.

Mr. TABER. That depends on your rainfall; does it not?

Colonel WHIPPLE. No, sir. We have quite a long rainfall record in that part of the country. Unless there is a basic climatic change we are quite sure that this project will pay out. In fact, our indication is that it will pay out readily and we could in fact sell the power available for more than enough to pay it out.

Mr. TABER. I hope so, but when I get the figures I have been given it does not show. The basis for the figures came straight from you. I do not know just how you are going to have it pay out, unless last year was a drought year or something of that kind and your general average might be better. When you put in an installed capacity of 280,000 and produce an average of 60,000 it is not what ordinary folks would call a profitable setup.

Colonel WHIPPLE. Sir, let me give you the figure we anticipate on the long-term average this project will produce. With its full installed capacity for the entire year it should produce 698 million kilowatt-hours throughout the year. Now, it is quite true, sir, as you have found out, that that amount of energy does not correspond to 280,000 kilowatts or anything like that, because this is designed as a peaking plant. It has dependable capacity at its maximum drawdown of 235,000 kilowatts with which it can handle peaks in adjacent power systems while the base loads are being carried more dependably by the steamplants operating perhaps 85 percent of the time.

Whether the hydroelectric plant is federally owned or privately owned, there is an economic balance between a high head peaking plant which can handle those peaks and the steam plants which operate most economically about 85 percent of the time. Whereas the system load factor runs normally around 60 to 65 percent, the system as a whole requires installed capacity usually over 50 percent higher than the average load.

Mr. TABER. Is the 698 million, you figured, the probable production at Clark Hill?

Colonel WHIPPLE. 698 million kilowatt-hours annually.

Mr. TABER. That would be on the basis of using about 90,000 average or a little less than 90,000 average kilowatt-hours?

Colonel WHIPPLE. Yes, sir.

Mr. TABER. Your installed capacity is 280,000, or 3 times that figure?

Colonel WHIPPLE. Yes, sir.

Mr. TABER. I believe 280,000 is the figure you gave me; maybe I am wrong.

Colonel WHIPPLE. No, sir; you are absolutely right. It is three times or over.

The point is, sir, that we evaluate this power based on figures which we obtain from the Federal Power Commission which give the value in the usual way, that is, both for capacity and energy. The power should be evaluated at about $19.80 a kilowatt-year for dependable capacity and 3.1 mills for energy. At that rate this power is actually worth about $6.8 million a year.

We have checked available contracts between the private utilities and the Tennessee Valley Authority and other people in the power business, and it is more and more the custom to make those contracts in terms of capacity and energy rather than a single kilowatt-hour rate, which is very seldom used in major transactions any more.

Mr. TABER. I did not know anything about what the rate was. I have not figured it, although it looks like about a 5-mill rate, offhand, that you have worked out on that plan. The thing still does not look like it is going to pay out.

Colonel WHIPPLE. Yes, sir. Your figures are very accurate, sir. Actually our figures show that in terms of average energy it is 4.58 mills per kilowatt-hour or 5.28 mills in terms of primary energy only.

Mr. TABER. I just figured that roughly in my head by looking at the figures—26 is one-half of 52; that is all the arithmetic I had on it.

Colonel WHIPPLE. Could we add one more thing to that, sir?

Mr. TABER. Yes.

Colonel WHIPPLE. We have checked a contract in this area between two private power companies down in this vicinity, a recent power contract, and we found that this contract provided for a capacity charge of $22.50, which has since been escalated to $25.30 per kilowatt-year, plus an energy charge based on actual expenses which was estimated for the initial year of operation at 2.96 mills. That is for a large contract. If we would consider the factors given in this contract, we would actually have a higher value than the one I had quoted to you. These values given us by the Federal Power Commission actually do correspond to commercial rates that are currently being used for large-scale exchanges of power, and that would mean that the market value of this power is $6.8 million a year or better. Accordingly, we feel that this Clark Hill power will pay out.

Mr. TABER. If it is worth $6.8 million, you ought to get it. That is the way to make the thing pay out.

Colonel WHIPPLE. If this power were sold commercially, it would be sold for more than $6.8 million, wholesale.

Mr. TABER. If you did not sell it to a private setup, they would have to pay to produce it themselves or get it from someone else.

When you sell it for less than that, you create a favored group, and that is not hardly paying enough respect to the taxpayers in the other parts of the country.

On this particular setup, I am not going to spend too much time because we are in so deep.

How much do you have involved in contracts at this installation now?

STATUS OF CONTRACTS

Colonel WHIPPLE. Sir, at the Jim Woodruff project there is none on the line yet, sir.

Mr. TABER. How much is contracted for?

Colonel WHIPPLE. The sale of it?

Mr. TABER. Not for the sale of it, because you do not have any contracts for the sale of power until after you have a plant producing; do you?

Colonel WHIPPLE. No, sir.

Mr. TABER. I mean how much of the generators and the water wheels and so forth do you have contracted?

Colonel WHIPPLE. Practically everything.

Mr. TABER. What will the kilowatt capacity be?

Colonel WHIPPLE. 30,000.

BUFORD DAM

Mr. MARSHALL. The next construction project is Buford Dam. We will insert pages 50, 51, and 52 of the justifications into the record at this point.

(The pages referred to follow:)

BUFORD DAM, GA. (CONTINUING)

Location.—On the Chattahoochee River at mile 348.5, approximately 35 miles northeast of Atlanta, Ga., in Gwinnet and Forsyth Counties.

Authorization.—1946 River and Harbor Act.

Benefit-cost ratio.—1.05 to 1 for Apalachicola, Chattahoochee, and Flint Rivers project, of which Buford Dam is an integral part.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$40,700,000	
Estimated local cash contributions	0	
Estimated project cost	40,700,000	
Appropriations to June 30, 1954	13,681,000	
Appropriations for fiscal year 1955	9,300,000	
Appropriations to date	22,981,000	56
Appropriations requested for fiscal year 1956	11,830,000	85
Balance to complete after fiscal year 1956	5,889,000	

PHYSICAL DATA

Dam:

Type: Rolled earth fill.

Height: 192 feet (maximum).

Length: Main dam, 1,630 feet; saddle dikes, 6,600 feet.

Reservoir capacity:	*Acre-feet*
Power	1,018,000
Flood control	610,000
At minimum pool	867,000
Total	2,495,000

Spillway:
Type: Unlined chute.
Capacity (spillway design flood): 16,400 cubic feet per second.
Power installations:
Initial and ultimate: 1 unit at 6,000 kilowatts and 2 units at 40,000 kilowatts—86,000 kilowatts.
Nominal head: 140 feet.

STATUS (JANUARY 1, 1955)

Entire project: 34 percent.
Acquisition of land: 35 percent.
Relocations: 3 percent.
First stage construction, including all excavation, saddle dikes, spillway, sluice and tunnel lining, and outlet works: 100 percent.
Second stage construction, including main earth dam and intake structure: 65 percent.
Procurement of sluice gates, head gates, stop logs, trash racks, and gate hoists: 83 percent.
Construction of powerhouse and switchyard: 0 percent.
Procurement of 3 turbines, 3 generators, 2 transformers, 3 governors, and associated accessory and miscellaneous electrical equipment: 3 percent.

COMPLETION SCHEDULE

Entire project: July 1957.
Land acquisition: January 1957.
Relocations: January 1957.
Dam closure: January 1954.
Power on line:
1 unit, at 40,000 kilowatts: December 1956.
1 unit, at 40,000 kilowatts: March 1957.
1 unit, at 6,000 kilowatts: June 1957.

JUSTIFICATION

Buford Dam is a multiple-purpose project on the Chattahoochee River. It will provide much-needed flood control in the Chattahoochee River Valley below the dam site which is subjected to damaging floods. The project will afford flood protection to the Chattahoochee Valley between Buford and West Point, Ga., and some protection to the city of West Point. This project, as a step in the development of the Apalachicola River system, will provide an increased flow which is essential to the provision of a 9-foot depth for navigation in the Apalachicola River. In addition to the power generated at the site, reservoir operation will increase the minimum flow at existing downstream power developments, thereby increasing their firm capacity and providing a large block of power in an area where it is urgently needed. Due to its proximity to Atlanta, the reservoir will have a large value for public use.

Fiscal year 1956.—The requested amount of $11,830,000 will be applied to:

Continue acquisition of lands in reservoir area	$1,381,000
Continue relocations	4,987,700
Initiate reservoir clearing	1,013,400
Complete main dam	171,300
Continue construction of powerhouse	780,000
Continue procurement of generators, transformers, turbines, and accessory and miscellaneous electrical equipment	2,495,500
Permanent operating equipment	111,100
Engineering and design	120,000
Supervision and administration	770,000
Total	11,830,000

The main dam will be 90 percent complete at the beginning of fiscal year 1956 and is scheduled for completion early in that year. Work on the powerhouse will begin in fiscal year 1955 and is scheduled to be more than 50 percent complete in fiscal year 1956. Present schedules must be maintained in order that the first power unit may be placed on the line in December 1956, with others to follow in March and June of 1957.

Mr. MARSHALL. Colonel, will you give us a statement on this dam?

Colonel WHIPPLE. The Buford project, sir, is a part of the same river system on the Chattahoochee-Apalachicola system. It was authorized in the 1946 Flood Control Act, and consists of a project for power and flood control purposes, and also, in aid of navigation, although this is a less important factor.

The construction on this dam is going extremely well. We are getting good work from the contractor, and the project is on schedule. The contracts which have been awarded have been very satisfactory.

We have recently been able to reduce the cost estimate from $41,981,000 to $40,700,000, a saving of about $1.2 million.

The dam will have an installed capacity of 86,000 kilowatts, and that power is expected to come on the line, the first power, in December 1956, but not quite as shown on the schedule, but we expect the 6,000-kilowatt unit to come on the line in January 1957, instead of June, and the second 40,000-kilowatt unit in April instead of March. So, the final schedule is a little better than as shown on the planned schedule.

There has been a slight delay from a work stoppage last year, but we believe we can still meet those scheduled dates.

I have looked at the dam recently myself, and we are getting quite high quality of work. We feel that this dam was very well designed so that it is economically constructed, and it takes full advantage of topographical advantages at the site. It is an earth dam with an off-channel excavation for the powerhouse, through a narrow saddle of rock, and altogether seems like a fine project.

Mr. TABER. With a $40 million cost this project is to include a powerplant of 86,000 kilowatts.

What do you feel the firm capacity of that would be?

Colonel WHIPPLE. The dependable capacity, sir, is 73,000 kilowatts, and the average energy output is 170.5 million kilowatt-hours.

Mr. TABER. What was that figure?

Colonel WHIPPLE. 170 million kilowatt-hours. In addition, there will be an increased amount of energy to downstream projects, which is estimated at 104 million kilowatt-hours.

These are private plants which exist farther down the Chattahoochee.

OPERATIONS AND MAINTENANCE

Mr. MARSHALL. The next item is that of "Operations and maintenance," for which there is a request of $6,782,000 for about 40 projects.

The tentative allocation, by project, is set forth on pages 57 through 61 of the justifications. We will insert those pages into the record at this point.

(The pages referred to follow:)

GULF AND SOUTH ATLANTIC BASIN

JUSTIFICATON OF ESTIMATE

1. Navigation

(*a*) *Channels and harbors.*—The work to be accomplished under this activity consists of maintaining the navigation channels and harbors of coastal harbors and waterways by means of dredging, snagging, and repairing harbor jetties and breakwaters; and periodic inspections and surveys to determine the condition of the projects for programing purposes and providing navigation interests with adequate information on existing channel conditions; all as authorized in the laws adopting river and harbor projects.

The budget estimate of $4,689,000 for fiscal year 1956 is required for essential maintenance work on 31 channel and harbor projects named in the list which follows. The projects listed have been subjected to an economic analysis and determined that continuing maintenance is justified. The amount of funds appropriated in recent years for this activity has not been sufficient to provide for the adequate and timely maintenance of all justified projects and has resulted in a substantial backlog of work, particularly structural repairs and the maintenance of moderate and shallow-draft navigation channels. This condition continues to exist.

	Tentative allocation, fiscal year 1956
Alabama:	
Bayou LaBatre	$30,000
Gulf Intracoastal Waterway (Mobile)	190,000
Mobile Harbor	210,000
Removal of water hyacinth, Mobile River	10,000
Florida:	
Canaveral Harbor	80,000
Charlotte Harbor	50,000
East Pass Channel from Gulf of Mexico into Choctawhatchee Bay	25,000
Fernandina Harbor	60,000
Intracoastal Waterway, Jacksonville to Miami	140,000
Jacksonville Harbor	100,000
Miami Harbor	7,000
Palm Beach Harbor	55,000
Panama City Harbor	150,000
Removal of Water Hyacinths	60,000
Tampa Harbor	30,000
Georgia:	
Atlantic Intracoastal Waterway (Savannah district)	110,000
Savannah Harbor	1,210,000
Savannah River below Augusta	60,000
Mississippi:	
Gulfport Harbor	245,000
North Carolina:	
Atlantic Intracoastal Waterway (Wilmington district)	210,000
Beaufort Harbor	20,000
Channel from Back to Lookout Bight	20,000
Far Creek	15,000
Morehead City Harbor	220,000
Rollinson Channel	35,000
Waterway from Pamlico Sound to Beaufort Harbor	30,000
Wilmington Harbor	340,000
South Carolina:	
Atlantic Intracoastal Waterway (Charleston district)	160,000
Charleston Harbor	470,000
Georgetown Harbor	200,000
Shipyard River	115,000
Project condition surveys	32,000
Total channels nad harbors	4,689,000

(*b*) *Locks, dams, reservoirs, and canals.*—The estimate of $1,239,000 for fiscal year 1956 provides for the operation and ordinary maintenance of the locks and dams, essential channel work, and the most urgent repair of the structures at 5

projects. The rehabilitation work includes such items as lock gate repairs and overhaul, painting of movable dam parts, valve rehabilitation, and navigable dam parts replacement. The estimate contemplates operation of the projects with the utmost economy consistent with the importance of the waterways to the national economy.

During calendar year 1953, the waterways listed transported more than 660 million ton-miles of commerce. Their continuous operation and proper maintenance is necessary to the general economy and national defense.

Tentative allocation, fiscal year 1956

Alabama: Black Warrior and Tombigbee Rivers	$870,000
Florida:	
Okeechobee Waterway	100,000
Oklawaha River	34,000
Louisiana: Pearl River, La. and Miss	125,000
North Carolina: Cape Fear River, above Wilmington	110,000
Total locks, dams, reservoirs, and canals	1,239,000
Total navigation	5,904,000

2. Flood control

(b) Other (including channel improvement projects, miscellaneous maintenance items, and inspections.)—The budget estimate of $110,000 provides for the minimum requirement of regular maintenance for the Lake Okeechobee levees and control structures in the central and southern Florida project.

Florida: Central and southern Florida	$110,000
Total flood control	110,000

3. Multiple-purpose projects including power

The budget estimate of $744,000 for operation and maintenance of the 3 projects in this category is the minimum amount necessary for operational requirements during fiscal year 1956. It contemplates deferment of other than indispensable ordinary maintenance and rehabilitation work. The total generating capacity of the Corps of Engineers multiple-purpose projects in this basin is 354,000 kilowatts.

Tentative allocation, fiscal year 1956

Florida: Jim Woodruff Dam	$69,000
Georgia:	
Allatoona Reservoir	200,000
Clark Hill Reservoir	475,000
Total multiple-purpose projects	744,000
Grand total, gulf and South Atlantic Basin	6,782,000

PRIOR YEAR FUNDS

Mr. MARSHALL. Colonel Powers, will you submit a comparison of comparable expenditures for the last 5 years?

Colonel POWERS. Yes, sir; I shall.

(The information requested follows:)

Funds obligated for operation and maintenance, general gulf and south Atlantic basin, fiscal years 1952 through 1956

1952	$8,219,100	1955	$7,438,700
1953	8,017,300	1956	6,880,900
1954	7,074,200	Budget request, 1956	6,782,000

Savannah Harbor

Mr. Marshall. Are there any questions?

Mr. Taber. In "Operations and maintenace," you have $1,210,000 for Savannah Harbor. That is quite a large item.

Why do you need as much as that? Will it take that amount to get the silt out of the place?

Colonel Powers. The Savannah Harbor is a rapidly silting project. Ordinarily, we remove in the neighborhood of 6 million to 7 million yards of material each year. The problem which is presented by the vast amount of material coming down the stream had caused us serious concern, and a model study was initiated during fiscal year 1955 in an effort to try to determine appropriate methods to rectify the flow of water, and perhaps realine the channel, or have control structures put there in an effort to reduce the average annual cost of maintenance.

Charleston Harbor

Mr. Taber. You have $470,000 allocated for Charleston Harbor.

Colonel Powers. Yes, sir.

Mr. Taber. Why do you need $470,000 for this purpose at Charleston Harbor?

Is there a lot of silt coming in there?

Colonel Powers. The Charleston Harbor is very similar, in other words, as far as rapidly silting interference.

We found some years ago, in 1947, that the maintenance cost at Charleston Harbor had reached such amazing proportions that something seriously had to be done about it. In 1940, 1941, and 1942 it cost only $11,000 to $12,000 per year to dredge and maintain the channels in the inner harbor.

By 1947, we needed $800,000 a year to maintain those same channels, which report or study has recently been completed, and it has been determined since the preparation of this budget request, that certain remedial works can be accomplished at a cost of approximately $2 million to reduce the annaul cost of maintenance. As a result, and when the tentative allocations are revised and furnished to the committee early in May, there will be a figure in excess of $1 million for Charleston Harbor in 1956.

By the end of 1956, it is planned to complete the realinement of major channels east of Drum Island, and to initiate construction of contracting works north of Drum Island in the Cooper River.

It is expected that the cost of these improvements to the channel will be paid for by a reduction in maintenance costs in a period of 7 years.

Warrior-Tombigbee River System

Mr. Taber. You have $870,000 allocated for the Warrior-Tombigbee River system. That is a pretty good-sized figure also.

Why is that so large? Does it involve siltation?

Colonel Powers. No, sir; it does not involve as much siltation, but we have 17 operating locks in that system, and we must have the personnel available to operate the lock system.

Mr. Taber. Do those locks operate year round?

Colonel POWERS. Yes, sir; there is some dredging and an annual cost for maintenance and repair of the lock structures themselves.

The maintenance of the lock gates, lock valves, and control facilities, is based on a 4-year program of accomplishing major works, sir.

ALLATOONA RESERVOIR

Mr. TABER. You have listed $200,000 for the Allatoona Reservoir. What is that for?

Colonel POWERS. That is a reservoir which is a multipurpose project, and it has an installed capacity of 74,500 kilowatts, and was completed in 1950. We have a staff of 36 people engaged in the maintenance and operation of the dam, and the reservoir, and the appertaining structures.

CLARK HILL

Mr. TABER. At Clark Hill you have a request for $475,000. What is that for?

Colonel POWERS. Yes, sir; fiscal year 1956 will actually be the first year that the Clark Hill Dam and Reservoir has been fully staffed to operate as a project.

Incidentally, the Allatoona Reservoir, by adjustment of operating procedures, and maintenance criteria, has been reduced from a $240,000 requirement in 1955 to $200,000 in 1956.

Mr. MARSHALL. The committee will stand adjourned until 10 o'clock tomorrow morning.

THURSDAY, APRIL 28, 1955.

SOUTHEASTERN POWER ADMINISTRATION

WITNESSES

DEPARTMENT OF THE INTERIOR

FRED G. AANDAHL, ASSISTANT SECRETARY FOR WATER AND POWER
WILBUR P. KANE, DIVISION OF BUDGET AND FINANCE
CHARLES W. LEAVY, ADMINISTRATOR, SOUTHEASTERN POWER ADMINISTRATION
DAVID W. BUSH, ASSISTANT TO THE ADMINISTRATOR, SOUTHEASTERN POWER ADMINISTRATION
THOMAS H. WIGGLESWORTH, CHIEF, DIVISION OF POWER OPERATIONS, SOUTHEASTERN POWER ADMINISTRATION

OPERATION AND MAINTENANCE

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$1,268,000	$1,228,000	$1,160,000
Transferred to "Salaries and expenses, Office of the Solicitor, Interior," pursuant to Public Law 465		−16,200	
Adjusted appropriation or estimate	1,268,000	1,211,800	1,160,000
Unobligated balance, estimated savings	−91,413		
Obligations incurred	1,176,587	1,211,800	1,160,000
Comparative transfer to "Salaries and expenses, Office of the Solicitor, Interior"	−18,012		
Total obligations	1,158,575	1,211,800	1,160,000

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
1. System operation and maintenance	$80,292	$72,500	$73,000
2. Purchase of energy and wheeling charges	897,290	978,000	925,000
3. Power contracts and rates	93,462	84,400	86,000
4. General administration	87,531	76,900	76,000
Total obligations	1,158,575	1,211,800	1,160,000

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Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
Total number of permanent positions	50	42	39
Average number of all employees	48	40	38
Number of employees at end of year	47	39	39
Average salaries and grades:			
General schedule grades:			
Average salary	$5,144	$5,520	$5,663
Average grade	GS–7.6	GS–8.3	GS–8.5
Ungraded positions: Average salary	$2,601	$2,676	$2,751
01 Personal services:			
Permanent positions	$237,313	$213,000	$209,000
Regular pay in excess of 52-week base	809	1,000	1,000
Total personal services	238,122	214,000	210,000
02 Travel	8,016	9,500	11,500
03 Transportation of things	52		
04 Communication services	4,150	4,700	6,000
05 Rents and utility services	390		
06 Printing and reproduction	412		
07 Other contractual services	900,038	980,000	929,000
08 Supplies and materials	5,827	3,500	3,000
09 Equipment	90	100	500
15 Taxes and assessments	1,478		
Total obligations	1,158,575	1,211,800	1,160,000

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$86,168	$130,348	$126,400
Adjustment in obligations of prior years	2,367		
Obligations incurred during the year	1,176,587	1,211,800	1,160,000
	1,265,122	1,342,148	1,286,400
Obligated balance carried forward	−130,348	−126,400	−136,400
Total expenditures	1,134,774	1,215,748	1,150,000
Expenditures are distributed as follows:			
Out of current authorizations	1,046,240	1,085,400	1,023,600
Out of prior authorizations	88,534	130,348	126,400

Mr. MARSHALL. The committee will be in order. This morning we will take up the Southeastern Power Administration.

We are pleased to have before our committee the Assistant Secretary of Interior, our former colleague and the former Governor of North Dakota, the Honorable Fred Aandahl.

SUMMARY OF APPROPRIATIONS AND REVENUES

We will place in the record the summary table on the first page of the justifications and the table on page 8 which shows the actual revenues for 1954 and the prospective revenues for 1955 and 1956.

(The information is as follows:)

Operation and maintenance

Appropriation act, 1955		$1,228,000
Supplemental appropriation act, 1955		----------
Total appropriation		1,228,000
Transfer to "Salaries and expenses, Office of the Solicitor, Interior"		−16,200
Adjusted appropriation		1,211,800
Decreases:		
Purchase of energy and wheeling charges	$53,000	
General administration	900	
		53,900
Subtotal		1,157,900
Increases:		
System operation and maintenance	500	
Power contracts and rates	1,600	
		2,100
Budget estimate, 1956		1,160,000

STATUS OF REVENUES

Last year's actual revenues and the revenues which are estimated for the current year and the budget year are as follows:

Projects	Fiscal year 1954 (actual)	Fiscal year 1955 (estimated)	Fiscal year 1956 (estimated)
Wolf Creek	$1,523,300.00	$3,686,000	$4,300,000
Center Hill			
Dale Hollow			
Old Hickory			160,000
Allatoona	924,128.50	943,000	1,100,000
Philpott	166,504.25	227,000	244,800
John H. Kerr	2,697,171.58	3,179,000	4,171,200
Clark Hill	2,619,918.89	2,955,000	4,312,400
Total	7,931,023.22	10,990,000	14,288,400

Mr. AANDAHL. I believe, Mr. Leavy, you have a general statement to make?

Mr. LEAVY. I have, sir.

Mr. MARSHALL. You may proceed.

GENERAL STATEMENT

Mr. LEAVY. Mr. Chairman and gentlemen of the committee, you are of course already acquainted with the statutory authority for the Southeastern Power Administration and with the activities for which the agency is responsible. Before bringing you up to date on the developments which have taken place since our last appearance before you I might therefore only mention in passing that the agency was established a little less than 5 years ago by the Secretary of the Interior to carry out in a 10-State area of the Southeast the power disposal responsibilities which are given him by section 5 of the Flood Control Act of 1944, and to invite your attention to the map attached to your copies of this statement which shows the area and the hydroelectric projects with which we are concerned.

First of all, some changes have taken place in the status of the generating capacity at the projects for which Southeastern is market-

ing agent. For convenience in examing the current status of capacity installations you may wish to follow the table which is the second attachment to the statement.

You will note that there are seven projects now operating, and that capacity installations have been completed at all seven. More than 1,030,000 kilowatts of capacity are installed.

In the budget year the first unit at the Old Hickory project will be installed, so that the total of installed capacity at the end of that year will exceed 1,050,000 kilowatts.

Thereafter, in the 2 years following the budget year, further installations at Old Hickory, together with installations at 3 other projects now under construction, will increase the capacity total to more than 1,200,000 kilowatts.

The output of the projects is being sold under 22 long-term contracts and 3 short-term, interim agreements. The entire output of the first 3 projects shown on the table (Wolf Creek, Center Hill, and Dale Hollow) is being sold to the Tennessee Valley Authority under a long-term contract. The Georgia Power Co. is purchasing the entire output of the Allatoona project under a long-term contract. The Appalachian Electric Power Co. is purchasing the entire output of the Philpott project under a short-term, interim agreement. The output of the John H. Kerr project is being sold in three ways: one part is being sold to the Virginia Electric & Power Co. under a short-term, interim arrangement, another part is being sold to the company under a long-term wheeling, firming, and sale of power contract, and another part is being sold under long-term contracts to 17 rural electric cooperatives of Virginia and North Carolina. Part of the output of the Clark Hill project is being sold to the South Carolina Public Service Authority and the Greenwood County Electric Power Commission under long-term contracts and the remainder of the output is being sold month by month on the basis of the best price obtainable among the several agencies interconnected with the project.

The status of revenues is set forth on the table which is the third attachment to the statement. You will note that last year's actual revenues reached a total of almost $8 million. We estimate that the total of this year's revenues will be increased to approximately $11 million, and that the total revenue for the budget year will be still further increased to approximately $14 millions.

The circumstances anticipated for the budget year will to a certain extent be the direct consequence of the accomplishment of current year objectives. Without in any way attempting a complete account of all the work currently in progress at the agency, some examination of the current year is nevertheless required in order that the budget year objectives may be defined.

The Clark Hill project generates power and energy in excess of the deliveries that can be made under the existing long-term contracts with the South Carolina Public Service Authority and the Greenwood County Electric Power Commission. Long-term disposition of the excess is undergoing secretarial resolution. As a part of such resolution, the negotiation of long-term power disposal contracts with the Georgia Power Co. and at least 52 (and possibly as many as 82) Georgia public bodies and cooperatives is a current year objective.

The long-term wheeling, firming and sale of power contract with the Virginia Electric and Power Co. provides for the disposal of two-

thirds of the Kerr project output to purchasers in Virginia and the northeastern part of North Carolina. One-third of the output remains for long-term disposal in that portion of North Carolina in which the Carolina Power and Light Co. is located. The negotiation of long-term power disposal contracts with the Carolina Power & Light Co. and at least 19 (possibly as many as 36) North Carolina public bodies and cooperatives is a current year objective.

The Philpott project is located in that portion of Virginia served by the Appalachian Electric Power Co. The company has deferred negotiations on a contract until the remaining long-term contracts for Clark Hill power disposal have been negotiated. The arrangements so pending negotiation with the Appalachian Electric Power Co. also provide, in conjunction with matching provisions in the Virginia Electric & Power Co. contract, for an integrated operation of the Philpott project with the John H. Kerr project. The negotiation of long-term power disposal contracts with the Appalachian Electric Power Co. and at least 2 (possibly as many as 5) Virginia public bodies and the initiation of integrated operations of the Kerr and Philpott projects are current year objectives.

Agreement on the formulation of cost allocations has been reached among the Department of the Interior, the Corps of Engineers and the Federal Power Commission. The agreement provides criteria for a joint, field-level determination of costs, cost allocation methods, and amounts for allocation. Current-year objectives are (1) completion of joint determinations on the 7 projects now in operation (determinations have so far been substantiallycompleted on 4 of them) and on 3 of the 4 projects now under construction, (2) application to the Federal Power Commission for approval of rates for the 7 operating projects (applications have so far been made for 3 of them), and (3) establishment of repayment accounts for the 7 operating projects.

Generation of power at the Jim Woodruff project will be interrupted periodically by high-water conditions. Firm power sales essential to the project's repayment requirements depend upon integration of the project's operations with the operations of another project. The negotiation of contractual arrangements with the Georgia Power Co. for integrated operation of Jim Woodruff with the Clark Hill project is a current-year objective.

In view of the foregoing, there are three major circumstances of the budget year that influence the adoption of budget year objectives: (1) Twenty-two existing long-term operational and power disposal contracts will require administration in the budget year. (2) At least 76 and possibly as many as 126 long-term operational and power-disposal contracts negotiated in the current year will require administration in the budget year. (3) Four new projects will require the negotiation of operational and power-disposal contracts in the budget year.

The budget year objectives adopted in these circumstances are as follows:

First, administration of at least 98 and possibly as many as 148 long-term operational and power-disposal contracts;

Second, establishment of rates for the Old Hickory, Jim Woodruff, Buford, and Cheatham projects, and maintenance of repayment accounts for the Wolf Creek, Center Hill, Dale Hollow, Allatoona, Philpott, John H. Kerr, and Clark Hill projects;

Third, disposal of Old Hickory and Cheatham power to the Tennessee Valley Authority;

Fourth, negotiation of long-term ararngements for Jim Woodruff and Buford power disposal; and

Fifth, determination of the benefits available from integrated operation of the Buford, Allatoona, Clark Hill, Jim Woodruff, and Hartwell projects, and definition of electrical means required to secure integrated operation.

An appropriation of $1,160,000, consisting entirely of "Operation and maintenance" funds, is requested for the activities required to prosecute these objectives. The activities are system operations and maintenance, purchase of energy and wheeling charges, power contracts and rates and general administration. The sum of $925,000, or approximately 80 percent of the total appropriation, is requested for purchase of energy and wheeling charges, to be devoted exclusively to the purchases of firming energy and the payment of wheeling fees which will occur during the budget year operation of the existing contract with the Virginia Electric & Power Co. The remaining $235,000 of the appropriation request will provide for the system operations and maintenance, power contracts and rates, and general administration activities comprising the direct operation and maintenance of the agency headquarters. Of this amount $73,000 is requested for system operations and maintenance, $86,000 for power contracts and rates, and $76,000 for general administration.

The budget year objectives represent a substantial increase in work over the current year. No corresponding increase is requested in funds for the direct operation and maintenance of the agency headquarters. Rather, the $235,000 requested for this purpose provides for a continuation of the agency's working force at the current year level.

Each of the activities to be conducted for attainment of the budget year objectives consists of a set of related tasks. These are enumerated and examined at length in the bound assembly of justification detail which the committee already has. A summation and highlighting of them here may provide some further illustration of the extent of the agency's budget year work.

The system operations and maintenance activity is carried out to provide for investigation of the power market; determination of alternative transmission costs; scheduling and dispatch of power generation; scheduling of storage and release of water; administration of contractual operation requirements; appraisal of proposed hydroelectric developments; and determination of methods for coordinating operation of present and proposed generating plants to obtain maximum utilization of resources. These tasks are accomplished continuously in every year. Their scope will increase in the budget year as a consequence of operational and power disposal arrangements secured in the current year, and the initiation of integrated operations.

The power contracts and rates activity is conducted to prepare for, accomplish, maintain and review the results of power disposal arrangements. In its conduct the agency determines the production cost and selling price of the power, establishes and secures approval of rates, negotiates and administers appropriate contracts and conducts perpetual review of results. Like those of system operations and maintenance, these tasks are continuing in nature and the amount

of work entailed in their accomplishment will increase in the budget year.

The General Administration activity is conducted to provide executive management for the agency and to supply the agency with supporting administrative and fiscal services. Its principal tasks are (1) executive direction and control of the agency as a whole, (2) administration of personnel matters, (3) procurement of supplies, equipment and materials, and the conduct of office services, (4) maintenance of accounts which record and control the expenditure of appropriated funds in accordance with the terms of their appropriation, and (5) preparation of the annual budget estimates. The activity's extent from year to year of course results from and is proportionate to the extent of the agency's other activities.

Funds appropriated for purchase of energy and wheeling charges are used only to pay amounts charged the Government under contractual arrangements for (1) delivery of power over non-Federal systems to load centers of preferred agencies for the account of the Government, and (2) purchase by the Government of energy to firm up federally generated power to the load factor required by preferred agencies. As I mentioned earlier, the appropriation requested for the activity is required solely to meet budget year obligations under the existing contract with the Virginia Electric & Power Co. It will accomplish service to 17 rural electric cooperatives at 72 points of wholesale delivery located within a 150-mile radius of the John H. Kerr project.

The amount of the appropriation request is not based on critical water year conditions at the project. In computing the amount of the estimate for fiscal year 1956, a determination was made of the actual payments that would have occurred under the Vepco contract had the contract been in operation and serving the estimated 1956 requirements of the 17 cooperatives during the 39 years for which actual water records are available. The amount of the appropriation request is the average of these yearly determinations.

Mr. MARSHALL. Thank you, Mr. Leavy.

PURCHASE OF ENERGY AND WHEELING

I see you have a decrease of $53,000 estimated for the purchase of energy and wheeling charges. What is the total you are spending in 1955 for the purchase of energy, and how much is it for wheeling?

Mr. LEAVY. I can furnish the figure for the record, Mr. Chairman.

(The information is as follows:)

Fiscal year 1955 expenditures for the purchase of energy and the payment of wheeling charges (9 months' actual expenditures and 3 months estimated expenditures)

Wheeling	$339,250.05
Firming	342,212.11
Total	681,462.16

Mr. LEAVY. I think the figure for this fiscal year would be misleading, since we have been disposing of the unsold portion of the power project with a special arrangement with VEPCO whereby that unsold portion is fed into their system and delivered by them to the cooperatives in lieu of purchases of firming energy. So the

figure for this fiscal year, if you wish, will be furnished for the record, but it will be lower than a normal figure on that.

The amount which we are requesting is somewhat lower than last year's appropriation, although it is presumed to be on approximately the same basis. In past years we have requested the amount which would be required under the most critical water year of record. Last year the committee suggested that we not request the maximum possible need but rather that we request an amount which would represent an average condition. What we have done in computing this amount is to take the 39 years of water history of the project and compute what the dollar requirement would be each year and simply average that out. It is our best estimate of the average requirement.

Mr. MARSHALL. As additional power facilities are constructed by the Corps of Engineers will you reduce your purchases of energy?

Mr. LEAVY. Not on the Kerr project, sir. There is no other source from additional projects which would make possible firming up of that energy. The Kerr plant is a peaking plant which operates at a rather low-load factor. In order to have something usable by the preferred agencies we must purchase the firming energy.

I should point out that of course all of the funds which are appropriated for the purchase of firming energy and for payment of wheeling fees are repaid in current revenues.

ESTIMATE OF CURRENT AND PROSPECTIVE SOURCES OF POWER

Mr. MARSHALL. Is the table on page 4, showing current and prospective sources of power, still your best estimate?

Mr. LEAVY. Yes, sir; I believe that is. It is based on the information which the Corps of Engineers gives us as to their scheduled installations. I believe it is current and accurate.

Mr. MARSHALL. We will place that in the record at this point.

(The information is as follows:)

January 1955, status of generating capacity and marketing arrangements

	Kilowatts operating at January of current year	Kilowatts under construction for operation in—				
		Current year	Budget year	Fiscal year 1957	Fiscal year 1958	Total
1. Wolf Creek	270,000					270,000
2. Center Hill	135,000					135,000
3. Dale Hollow	54,600					54,600
4. Allatoona	74,000					74,000
5. Philpott	14,000					14,000
6. John H. Kerr	204,000					204,000
7. Clark Hill	280,000					280,000
8. Jim Woodruff				30,000		30,000
9. Old Hickory			25,000	75,000		100,000
10. Cheatham					36,000	36,000
11. Buford				86,000		86,000
Total	1,031,600		25,000	191,000	36,000	1,283,600

CONTRACT NEGOTIATIONS

Mr. MARSHALL. What progress have you made during the last year in negotiating long-term contracts in the areas where you have had temporary or short-term arrangements?

Mr. LEAVY. We have made little progress in that. We have reached no conclusive stage in those matters. As you no doubt know, there is a problem existing in the State of Georgia as to the manner of marketing half of the output of the Clark Hill project. That problem, of course, is affecting the situation with respect to the unsold one-third of the Kerr project and the long-term disposition of the Philpott project.

INTEGRATION OF PROJECTS

Mr. MARSHALL. To what extent are your total disposal facilities integrated and to what extent are these facilities for individual powerplants operated separately?

Mr. LEAVY. Southeastern, of course, has no transmission lines. We do, however, have some plans for integration of the operation of the projects. It is our intention to try to integrate the operation of the Philpott and Kerr projects and the contract which we have with Virginia Electric & Power Co. provides for the necessary wheeling over their transmission facilities to accomplish that insofar as they are concerned. We must still make arrangements with Carolina Power & Light and Appalachian Power Co. to accomplish that.

We are also discussing with the Georgia Power Co. the possibility of integrating through their transmission facilities the operation of the Clark Hill and Jim Woodruff projects. If it appears feasible and desirable it would also be possible to involve Allatoona and Buford in that, since Georgia Power's transmission facilities reach all of those four projects.

Mr. MARSHALL. Were you to bring about greater integration, what efficiencies would result?

Mr. LEAVY. Well, in case of integration of the Kerr and the Philpott projects it is our belief based upon our studies that we would gain 8,000 kilowatts of dependable capacity which would mean something on the order of $85,000 a year additional revenue.

In the case of integration of the projects in the Georgia area, to which I have referred, we feel that if they can be integrated that projects of the type of Jim Woodruff, which have high energy capability, will be able to assist us with the high-head projects which are somewhat deficient in energy, and in turn the high-head projects such as Clark Hill will be able to furnish the capacity that is needed by the low-head projects when their capacity is reduced by high water. We feel that it will greatly increase the efficiency of the projects and the ability of the projects to pay out.

STATUS OF REVENUES

Mr. MARSHALL. In your opening statement you have a list of projects with the status of revenues for each. I notice that your 1955 estimate in all instances is considerably higher than your 1954 actual. I also note that your 1956 estimate is considerably higher than your 1954 actual. How did your 1954 actual compare with your 1954 estimate submitted with last year's budget?

Mr. LEAVY. I cannot answer you specifically. I am quite sure that it would be considerably less than the estimates, since the estimates are in all cases based upon an assumption of average water conditions.

At all of the projects involved in 1954, water conditions were rather poor. For that reason the revenues are low. That is particu-

larly true of the Cumberland projects, where the charge bears a direct relationship to the amount of water.

Mr. MARSHALL. If present weather conditions were to continue, then your estimates would be considerably out of line; would they not?

Mr. LEAVY. That would be possible. I do not believe that the 1955 estimate will be much out of line. There is some indication that the revenues on the last four projects will be somewhat less than the estimate. On the other hand, there is every indication that the revenues on the Cumberland projects will be higher than the estimate. I think the total will approach that.

Mr. TABER. Which are the Cumberland projects? It does not seem to be named that in your table.

Mr. LEAVY. I am sorry, sir. Wolf Creek, Center Hill, and Dale Hollow, the first three projects on the list, are the Cumberland projects.

REPAYMENT SCHEDULES

Mr. MARSHALL. How has this water condition affected your repayment schedules?

Mr. LEAVY. As to the last fiscal year the water conditions would indicate a theoretical deficit on the projects. Of course, the rates and the repayment schedules are based on an assumption that you will have up and down fluctuations based on water. Presumably there will be years during the repayment schedule when you will far exceed your average necessary revenue and there will be years in which you will fall below.

Now in 1954 because of water conditions we have fallen below. We have also fallen below somewhat in part because permanent marketing arrangements have not been made. So we have not been getting the maximum revenue from the projects that we expect to get.

REVENUE ESTIMATES

Mr. MARSHALL. We note in part 1 of the hearings on the appropriation bill for 1955 that the total estimate of revenue for 1954 was $11,762,137, which compares with an actual figure of $7,931,000, so there was a considerable overestimate.

Mr. LEAVY. I think half or better of that difference is accounted for by the Cumberland projects. Whenever we estimate on those we estimate the amount at roughly $3½ million, which is based on average water conditions. As you will note, the actual revenue is about $2 million less. That accounts for a good deal of the difference.

We also assumed that permanent marketing arrangements would have been made on some of the projects, and that simply has not developed yet.

POWER RATES

Mr. MARSHALL. Has there been any increase in power rates in this territory in the last 2 years?

Mr. LEAVY. Not to my knowledge, sir.

CONTRACTS WITH PRIVATE POWER COMPANIES

Mr. KIRWAN. How many private power companies or private utilities are wheeling your power?

Mr. LEAVY. One, sir; the Virginia Electric & Power Co. is the only one.

Mr. KIRWAN. Is that the only one?

Mr. LEAVY. That is the only one, sir.

Mr. KIRWAN. When does that contract expire?

Mr. LEAVY. Our contract with the company?

Mr. KIRWAN. Yes.

Mr. LEAVY. It is a long-term contract that automatically renews itself each 5 years unless it is canceled on 3 years' notice.

Mr. KIRWAN. That is one of the best contracts you have with that company or with any company in the Southeastern Power operations; is it not?

Mr. LEAVY. It is a contract that is quite satisfactory to us and I believe to the company and to the cooperatives.

Mr. KIRWAN. That is what I mean. It is a very good contract.

Mr. LEAVY. We have had no difficulty at all there.

Mr. KIRWAN. How are your relationships with the rest of the companies?

Mr. LEAVY. I will start up at the north end.

We have had no specific negotiations with Appalachian Electric & Power Co., but they are buying the output on a short-term basis of the Philpott project.

We have not reached any agreement with Carolina Power & Light Co., which it is assumed will handle one-third of the output of the Kerr project.

In South Carolina we have had thus far no occasion to deal with the private companies in that State since there are two large public agencies both of which have built into the Clark Hill project and are taking power; the Greenwood County Electric Power Commission and the South Carolina Public Service Authority.

In Georgia, as I am sure you know, there is a considerable problem since the viewpoints of the Georgia Power Co. and the cooperatives which hope to receive power from the project are not quite in accord.

GEORGIA POWER CO.

Mr. KIRWAN. The Georgia Power Co. is quite a hard taskmaster; is that right?

Mr. LEAVY. Would you mind telling about the Georgia Power situation, Mr. Aandahl?

Mr. AANDAHL. What was your question, sir?

Mr. KIRWAN. They are quite a hard taskmaster; aren't they?

Mr. AANDAHL. I would say they are good businessmen and are trying to work out a contract that has good business qualities in it as far as their company is concerned.

Mr. KIRWAN. In other words you mean something good for the Georgia Power Co.?

Mr. AANDAHL. I think from the standpoint of economic values they are fair in what they are proposing. The problem there centers entirely around the question of the relationship between public and private power and not particularly on the economic values.

Mr. KIRWAN. That should cover part of the question, as to the relationship. I do not think it is as friendly as it is with the other companies.

Mr. AANDAHL. The Georgia Power Co. has felt that there is a particular circumstance in their area, with a high potential of Federal projects, and they are concerned about their business being overridden by the Federal projects. For that reason they have been reluctant to enter into the type of wheeling contracts that we have elsewhere in the marketing area.

Mr. KIRWAN. That is what I say. I am not asking you, but I am giving my own opinion, Mr. Secretary. For years I have been on the Interior Subcommittee, and I have noticed that that company did not enter into the negotiations in as friendly a manner and as good a way as the rest of the companies.

Mr. AANDAHL. They have opposed the standard wheeling type of contract. However, we have a contract negotiated with them which is known as a tricontract proposal. They are ready to sign and approve that contract at any time. It is not acceptable to the cooperatives. The objection that the cooperatives have is the question of who has title to the power during the period that it is in transit.

Mr. KIRWAN. That is what I mean. From the many years I have been on this committee it has seemed to me thay were not as friendly or did not want to negotiate in the same spirit as the other companies.

Mr. AANDAHL. The Georgia Power Co. is perfectly willing to negotiate and to let its transmission facilities be used to get the Clark Hill power to the preference customers, but they do not want to handle it under the standard wheeling arrangements that we have in the case of the VEPCO contract and that we have in many other places in the Department of Interior marketing areas.

Mr. KIRWAN. You are correct there. They do not want to handle it in the same way the others do. They want to be the Georgia Power Co. The rest seem to cooperate in handling the power under the established standard arrangements thinking it was fair to all concerned. However, that company does not seem to want to do that and never did.

I am not complaining to you. Maybe they are right; I do not know. I am only saying that in my years on this committee I have noticed they never have cooperated in this matter like the rest of them.

Mr. AANDAHL. They definitely do not want what we call the standard type of wheeling contract.

Mr. KIRWAN. That is the answer I want. They definitely do not want it.

Mr. AANDAHL. The standard wheeling-type contract.

Mr. KIRWAN. The Virginia Electric & Power Co. contract I believe is a very good one. I hope that you go along with what they have over there.

OPERATING EXPENSES

How are you doing Mr. Leavy, so far as funds for your staff is concerned? Are you keeping them down or have you had enough money to operate properly?

Mr. LEAVY. I believe, sir, we have had enough to operate properly. We have been quite restricted in the amounts we have had. We have a very small staff, we believe, for the responsibilities we have. Occasionally we get behind on things but I think if we are able to continue on the present basis that we can do our job.

Mr. KIRWAN. That is what I wanted to know. The Government invests many, many millions of dollars into flood control and into

power facilities down there. If you do not have enough men to properly market this power then you should make it known to this committee and to the Congress. That is what I want to know: Have you enough people employed in your service?

Mr. LEAVY. On the basis of our present appropriations and what we are requesting, we can do our job, sir.

Mr. KIRWAN. You can do a good job?

Mr. LEAVY. Yes, sir.

Mr. KIRWAN. That is all that is necessary for you to do, a good job. Congress should give you the proper staff to do that job.

NEW PROJECTS

How many new projects are coming in this year, if any?

Mr. LEAVY. There is nothing coming in this year. During the next budget year, which we are talking about, there will be an installation in the Old Hickory project on the Cumberland which will commence operation. Then the following year that project will be completed. The Jim Woodruff and Buford projects will come in. We have those to worry about. We have also not fully marketed the seven projects which are completed.

REVENUES ESTIMATED OVER REPAYMENT PERIODS

Mr. KIRWAN. What do you think the revenues will be when they are all completed? What will be the revenue that the Treasury will get each year?

Mr. LEAVY. I could not give you an estimate, sir, on the four projects that are not completed. I think the estimate for the budget year represents about the revenue we can expect to get from the seven that are in operation. I do not know what it will be from the others because we have not fixed rates. There has been no cost allocation. We do not know what we will have.

Mr. KIRWAN. If you can get some idea, I wish you would put it in the record. All of those projects are going to pay out in time?

Mr. LEAVY. That is our job, sir. We expect to do it.

Mr. KIRWAN. It is your job, but you are not responsible if in some years they have too much water and other years they do not have enough. You cannot be given the blame for that.

If you can get it together I would like to see a statement of some kind to show if those projects are going to be paid for with money coming back to the Government from the sale of their power.

Mr. LEAVY. We will try to make an estimate which will give you some idea of the expected revenue from the total group of projects.

(The information is as follows:)

Estimated total gross revenue during 50-year repayment periods

Projec	*Revenue*
Wolf Creek Center Hill Dale Hollow	$206, 800, 000
Allatoona	[1] 55, 400, 000
Clark Hill	222, 000, 000
John H. Kerr Philpott	[2] 262, 900, 000
Total	747, 100, 000

[1] Includes approximately $2 million in headwater benefits.
[2] Projects are to be integrated operationally and economically.

Based on preliminary payout studies, it is estimated that the foregoing revenues will be adequate to cover operation and maintenance, replacements, marketing expense, and amortization with interest of the capital investment allocated to power.

NUMBER OF PERSONNEL

Mr. BOLAND. How many personnel do you have in the Southeastern Power Administration? How many employees do you have?

Mr. LEAVY. We actually have 33 people at the present time. We have 5 vacant positions. Our estimate for the next fiscal year is that we will have an average of 38 people.

Mr. BOLAND. The amount you request is $210,000?

Mr. LEAVY. $235,000, sir.

Mr. BOLAND. Where is that? I am looking at the justifications. On what page is that?

Mr. LEAVY. It is on the cover sheet of the statement and it is also on page 7 in the first full paragraph. That is almost precisely the amount that we have during this fiscal year for our operation of the office.

Mr. BOLAND. You plan to have 38 employees for fiscal year 1956?

Mr. LEAVY. Yes, sir.

Mr. BOLAND. Did you say you had 33 in fiscal year 1955?

Mr. LEAVY. I believe we are authorized 38 or 39, but we actually have some vacancies at the present time.

Mr. BOLAND. I notice in the justifications that the amount requested for 1956 is $210,000. Why is that?

Mr. LEAVY. As Mr. Bush tells me, that is the personal services part of the $235,000. The $235,000 is for the total operation of the office, $210,000 of which is for personal services. The balance is for travel, communications, supplies, and that sort of thing.

Mr. BOLAND. Do the figures jibe, as to the $210,000 and $235,000? On page 20 of the justifications personal services are shown at $210,000; travel, $11,500; communications, $6,000; supplies and materials, $3,000; and equipment, $500.

Mr. LEAVY. I believe they add up to the $235,000.

Mr. BOLAND. They do not add up to $235,000. $11,000, $6,000, and $3,000 add up to $20,000, which would make it $230,000.

Mr. LEAVY. You have $210,000, $11,500, $6,000—and then of this $929,000 figure $925,000 is for the wheeling and firming contracts and $4,000 of that goes into the $235,000.

Mr. BOLAND. That makes a difference.

Mr. LEAVY. I believe the balance will add up.

Mr. BOLAND. That is all. Thank you.

CONSTRUCTION COSTS AND OPERATING EXPENSES

WOLF CREEK

Mr. TABER. I wonder if you could give me a statement as to the cost of each of these projects.

Wolf Creek is the first one. Can you give me a statement as to the cost of that?

Mr. LEAVY. You want the total cost?

Mr. TABER. The total cost.

Mr. LEAVY. The figure I have is $78,904,000.

Mr. TABER. Do you know the regular operating expenses of this?

Mr. LEAVY. The estimate that we have, which is based on the average expense to date of the operation and maintenance of the project, is $198,400.

Mr. TABER. You mean just for the operation of the dam and powerplant and incidentals to that?

Mr. LEAVY. Yes, sir. That, as I understand it, is the part of the operation and maintenance cost that is to be paid from power. I presume there is some additional cost of operating the project that is allocated to flood control.

CENTER HILL

Mr. TABER. What did it cost for the Center Hill project?

Mr. LEAVY. The construction cost, sir?

Mr. TABER. The cost of the job, complete.

Mr. LEAVY. $44,320,000.

Mr. TABER. What would the operating expense be for that project?

Mr. LEAVY. $147,700.

DALE HOLLOW

Mr. TABER. What is the cost for Dale Hollow?

Mr. LEAVY. The total cost is $27,848,000 and the operation and maintenance cost which is charged to power is $152,000.

OLD HICKORY

Mr. TABER. The Old Hickory project is not completed?

Mr. LEAVY. I have no figures on that, sir.

ALLATOONA

Mr. TABER. What is the cost for Allatoona?

Mr. LEAVY. The construction cost is estimated at $30,919,000.

Mr. TABER. What is the operating cost?

Mr. LEAVY. $175,000.

PHILPOTT

Mr. TABER. What is the cost of the Philpott project?

Mr. LEAVY. $13,340,000 for construction cost.

Mr. TABER. What is the operating cost?

Mr. LEAVY. $81,100.

JOHN H. KERR

Mr. TABER. What is the cost of the Kerr project?

Mr. LEAVY. The total construction cost is $87,081,000.

Mr. TABER. What is the operating cost?

Mr. LEAVY. The figure I have includes not only the corps' cost of operation and maintenance but also the cost of wheeling and firming to date, so that is a rather high figure, $1,838,200. But it is a cost that must be paid, of course.

CLARK HILL

Mr. TABER. What is the cost of Clark Hill?

Mr. LEAVY. The total cost is $81,183,000. The O. and M. figure I have is $672,200, and that includes an amount for transmission

charge, which I believe is computed on the basis of the tricontract proposal. So it is more than simply the corps' operation and maintenance expense.

MARKETING COSTS

I might mention that in our repayment plans we also include on all of these projects a figure for marketing costs, which is to repay the sums that are appropriated to our agency.

Mr. TABER. What do you have charged to each of these projects, respectively?

Mr. LEAVY. On our marketing costs?

Mr. TABER. Yes.

Mr. LEAVY. These are the annual cost estimates.

On Wolf Creek we have $12,400.

On Center Hill we have $7,100.

On Dale Hollow we have $4,800.

On Allatoona we have $18,500.

On Clark Hill we have $100,000.

Mr. TABER. $100,000?

Mr. LEAVY. Yes, sir.

Mr. TABER. Philpott?

Mr. LEAVY. Philpott is $12,000. Kerr is $105,000. Clark Hill is $100,000.

COSTS, REVENUES, AND POWER PRODUCED BY EACH PROJECT

Mr. TABER. I was given by the engineers the amount of firm power that they produced in the Clark Hill project at 60,250 kilowatts. Could you give me the firm power produced by each of these other projects?

Mr. LEAVY. I can give you fiscal year 1954.

Mr. TABER. That is what I was trying to get.

Mr. LEAVY. Would you like both the kilowatts of capacity and the kilowatt-hours?

Mr. TABER. I have the capacity.

Mr. LEAVY. You would like the kilowatt-hours?

Mr. TABER. Yes, I would like to have that, and I would like to have these other figures in a table, along with the revenue estimate so that they would all be shown in one place. I would like to have the cost figures and the operating expense figures in separate columns, indicating what is yours and what is the corps' expense, if we could have that.

Mr. LEAVY. We can do that, sir.

Mr. TABER. It will be much easier to follow if we have that.

Mr. LEAVY. I wonder if what you want should not also indicate the portion that is allocated to power. You see, the figures I have given you are total costs. Not all of that is to be repaid by power.

Mr. TABER. Well, I do not mind your giving it. Frankly, I am suspicious of those figures.

Mr. LEAVY. If you wish to have the total figure we can give that.

Mr. TABER. I would like to have the total figures. If you want to give another column with the allocation to power, as long as you show the total cost, it is all right.

Mr. LEAVY. I will put that in. I just wanted to be sure we had no misunderstanding about the implications of that figure.

If I understand correctly, you also would like a tabulation of the production or the sales at each of the plants during fiscal year 1954?

Mr. TABER. Yes. Could it all go in one table, or would you have trouble?

Mr. LEAVY. I think we are dealing with several different things.

Mr. TABER. All right; put it in a separate table. I do not think you can put the power sales into the same table very well.

Mr. LEAVY. No, I do not believe so, sir.

Mr. TABER. I would like to have another table that would show as to each one of these projects the generating capacity as it appears on that table and then the average production.

Do you have that last information anywhere so that we could have it now?

Mr. LEAVY. We have the figures that show the sales by kilowatts of capacity and by kilowatt-hours of energy as to each of the projects. We can tabulate those for you if you wish.

Mr. TABER. That would show the overall kilowatt production for the year?

Mr. LEAVY. That is right, sir.

Mr. TABER. It would not show the firm power produced, however. Can you put that in?

Mr. LEAVY. We can put in the figure that shows the amount of capacity which has been produced over the year, if you wish to compare that to the total capacity of the project.

Mr. TABER. Put in the total for the year and the firm power production for the year for each plant.

(The information is as follows:)

Costs, revenues, and power production by projects, Southeastern Power area

Project	Project costs			Power produced in fiscal year 1954			Status of revenues		
	Estimated total construction cost	Operation and maintenance [1]	Marketing costs	Installed generating capacity [2] (kilowatts)	Peak generation (kilowatts)	Energy (kilowatt-hours)	Fiscal year 1954, actual	Fiscal year 1955, estimated	Fiscal year 1956, estimated
Wolf Creek	$78,904,000	[3] $198,400	$12,400	270,000	270,000	445,658,000	$1,523,300	$3,686,000	$4,300,000
Center Hill	44,320,000	[3] 147,700	7,100	135,000	135,000	306,231,000			
Dale Hollow	27,848,000	[3] 152,000	4,800	54,600	54,000	70,473,000			
Allatoona	30,919,000	175,000	18,500	74,000	87,300	122,394,000	924,128	943,000	1,100,000
Clark Hill	81,183,000	[4] 672,200	100,000	280,000	115,000	528,242,750	2,619,919	2,955,000	4,312,400
John H. Kerr	87,081,000	[4] 1,838,200	105,000	204,000	162,700	350,885,172	2,697,171	3,179,000	4,171,200
Old Hickory [5]									160,000
Philpott	13,340,000	81,100	12,000	14,000	12,000	14,241,800	166,504	227,000	244,800
Total	363,595,000	3,264,600	259,800	1,031,600	836,000	1,838,125,722	7,931,023	10,990,000	14,288,400

[1] Power facilities only.
[2] Nameplate rating of installed capacity.
[3] Average annual operation and maintenance to date.
[4] Includes cost of transmission service charge for Clark Hill project and of purchased power and transmission service charge for John H. Kerr project.
[5] As Old Hickory project is under construction, information as to total construction costs and other costs is unavailable at this time. First revenue expected in fiscal year 1956.

Mr. TABER. As I understand it, Wolf Creek, Center Hill, and Dale Hollow are all under contract to the TVA?

Mr. LEAVY. The output of those plants is all sold to TVA; that is right.

Mr. TABER. What do you get for it?

Mr. LEAVY. The existing contract provides for a payment of $3½ million a year which is adjusted based on waterflows. It can be as low as three-sevenths or as high as eleven-sevenths of the basic figure.

We are presently renegotiating that charge with TVA, since that charge was based upon an estimate of construction cost and of operation and maintenance expenses which were somewhat lower than the actual costs that have occurred. I am of the opinion that that figure will be adjusted upward somewhat.

Mr. TABER. In 1954 you only got $1,523,300 out of those three plants?

Mr. LEAVY. That is right, sir. It was a very low water year.

Mr. TABER. You had an operating cost of something in the neighborhood of $500,000 or a little more. You had costs of the project running into practically $150 million, so the Government was short of a proper amortization program, including interest, by at least $5 million.

Mr. LEAVY. Well, I believe, sir, that you are assuming that power would pay the entire cost. The revenue for last year due to the low water condition was much less than the average that must be secured, but it is assumed in the agreement that those low years will be balanced by high years.

This year, for example, the basic figure there, it appears, will be exceeded rather materially.

The assumption is that over the period of the contract the basic $3½ million figure will be realized. As I say, that figure will be adjusted upward somewhat.

Mr. TABER. That is an assumption, and you do not really know anything about how it is going to work out.

We are currently in the 10th month of fiscal year 1955. I wonder if you would be able to give us the first 9 months' receipts on these various projects?

Mr. LEAVY. We can give you that on the four projects that are not involved in the TVA contract. That is an annual charge and the amount of the charge will not be known until the year is over.

Mr. TABER. You mean the TVA charge is an annual charge?

Mr. LEAVY. That is right, sir.

Mr. TABER. The Allatoona, Philpott, Kerr, and Clark Hill charges are monthly?

Mr. LEAVY. That is right, sir. We have those figures. We can furnish those.

(The information is as follows:)

Revenues by projects, July 1954 through March 1955

Projects	*Revenues*
Clark Hill	$1,543,122.00
John H. Kerr	2,060,012.59
Philpott	145,431.75
Allatoona	571,740.50
Dale Hollow, Center Hill, Wolf Creek	(1)

[1] Revenue for projects in Cumberland Basin is computed at the end of the fiscal year on the basis of actual water conditions for the entire 12-month period.

Mr. TABER. You do not have them with you?

Mr. LEAVY. No, I do not.

Mr. TABER. Do you have any idea of what they are running?

Mr. LEAVY. I have some idea of how they are running compared to the estimate that we have here.

As I indicated, it appears that those four projects will run somewhat lower than the estimate. It appears that the Cumberland project will run higher than the estimate, so that I think the total estimate will be fairly accurate.

Mr. TABER. You mean the Cumberland project will be more than the $3.6 million?

Mr. LEAVY. That is right sir.

Mr. TABER. You do not have an estimate of what the others will run?

Mr. LEAVY. I am just depending on my recollection. I believe that the Allatoona project will run $50,000 to $100,000 less than the estimate.

Mr. TABER. That will make it below 1954.

Mr. LEAVY. Yes, sir.

Mr. TABER. What will it be for the Philpott project?

Mr. LEAVY. I believe that will be somewhat less than the estimate. How much, I do not know.

Mr. TABER. Just about the same as last year?

Mr. LEAVY. I think it will exceed last year, but I am speculating a little bit. There are still 2 months to go, of course.

Mr. TABER. What will it be on the Kerr project?

Mr. LEAVY. The Kerr project will be maybe as much as $500,000 less than that estimate if during the balance of the year we market on the present basis. Now, if before the end of the year we make a long-term disposition of the remaining one-third it would change the picture. These estimates assumed that those arrangements might be made before the fiscal year was finished.

Mr. TABER. What is it for the Clark Hill project?

Mr. LEAVY. If we continue to market Clark Hill on the present basis that estimate is probably about $8,000 or $9,000 high.

WHEELING AND FIRMING CHARGES

Mr. TABER. Your request for funds is $1,160,000. A part of that is for wheeling; is it not?

Mr. LEAVY. That is right, sir; $925,000 of it is for wheeling and firming.

Mr. TABER. $925,000?

Mr. LEAVY. Yes, sir.

Mr. TABER. Is there any breakdown of these funds anywhere, and if there is, on what page is it?

Mr. LEAVY. There is a breakdown at the bottom of page 6, and the top of page 7, which breaks out the $925,000, and the balance of $235,000 is broken down into three activities.

Mr. TABER. Let us take a look at page 6 of the book.

Mr. LEAVY. Yes, sir; it gives a statement, sir, in the paragraph beginning about two-thirds of the way down the page.

Mr. TABER. How much of your money went for the purchase of energy, and how much for wheeling charges during 1954?

Mr. LEAVY. The firming charges during 1954 were $589,160.51. The wheeling charges were $308,129.50. The total of those two figures is $897,290.01. I think that figure included about $2,000 out of a supplemental appropriation which we were given for wheeling and firming charges last spring. The figures will exceed the amount shown in our regular appropriation.

EXPENDITURES FOR OPERATING EXPENSES

Mr. TABER. You said you had 31 out of a total estimate of 39 on the roll currently?

Mr. LEAVY. 33, sir.

Mr. TABER. What were your expenditures out of your appropriation for operating expenses, other than expenses for wheeling and firming power, down to your most current date?

With only that number of the personnel, you should be able to give us the figures down to a rather close current date.

Mr. LEAVY. I think I have that information; I think I can give you a very current figure. You are interested in this fiscal year, I take it?

Mr. TABER. Yes, sir.

Mr. LEAVY. This is through March 31 of this year, which would be three-quarters of the fiscal year. Would you like it broken down by these object classes?

Mr. TABER. I would like to have the wheeling and the energy costs separate from the other figures.

Mr. LEAVY. The total for the purchase of power and rental of facilities, through March 31, is $470,362.16.

Now, as I believe I indicated earlier, that is a low figure, in part because of this special arrangement which we have had with Vepco.

Mr. TABER. What were the other figures?

Mr. LEAVY. The total obligations to date on personal services is $153,196.76.

Mr. TABER. Indicating that you probably would have about $20,000 to $25,000 balance?

Mr. LEAVY. Well, that is about three-fourths of the budgeted amount for personal services for the year.

Mr. TABER. That includes the incidentals also; does it not?

Mr. LEAVY. No; it does not, sir.

Mr. TABER. They are not included?

Mr. LEAVY. No, sir.

Mr. TABER. What are the other figures?

Mr. LEAVY. There is a whole block of figures, and I can give you all of those, or if you want to simplify it, I can take the total which

I have here, and you can deduct the wheeling and firming amount, and get the figure which you want.

The total is $640,721.01, and if we deduct from that $470,362.16, I believe that is the figure in which you are interested.

Mr. TABER. $470,362.16?

Mr. LEAVY. Yes, sir; that difference is $170,358.85. That is the total of expenditures, other than for wheeling and firming, which includes personal services and all of the other items.

Mr. TABER. All right; I think that is all I have, Mr. Chairman.

REVENUES DEPOSITED INTO THE TREASURY

Mr. MARSHALL. Would you place into the record at this point the amount of money which has been paid into the Treasury of the United States for each of these projects, and break that down to show the amount of interest that has been paid back separately, so that there is a breakdown of what would be principal and interest?

Mr. LEAVY. I think, sir, that probably what we can do is show the total amount that has been repaid, since on most of these projects the actual repayment accounts have not been set up. I may be able to get that.

Mr. MARSHALL. If you can get it by project, I would like to have it by project, but if you cannot, put it in by the total.

What is the interest rate?

Mr. LEAVY. 2.5 percent.

(The information requested is as follows:)

All amounts deposited in Treasury through March 1955

Projects	*Amount*
Clark Hill	$4, 794, 218, 19
John H. Kerr	6, 138, 418. 90
Philpott	311, 936. 00
Allatoona	4, 741, 971. 57
Dale Hollow Center Hill Wolf Creek	[1] 10, 286, 900. 00
Total	**26, 273, 444. 66**

[1] Does not include fiscal year 1955 earnings, which are payable at end of fiscal year.

THURSDAY, APRIL 28, 1955.

OHIO BASIN

WITNESSES

CORPS OF ENGINEERS

COL. JOHN L. PERSON, DIVISION ENGINEER, OHIO RIVER DIVISION, CINCINNATI, OHIO
J. W. BRUCE, OHIO RIVER DIVISION, CINCINNATI, OHIO
R. L. GIBSON, OHIO RIVER DIVISION, CINCINNATI, OHIO
COL. J. U. ALLEN, ASSISTANT CHIEF OF CIVIL WORKS FOR RIVERS AND HARBORS
COL. W. F. POWERS, CHIEF, OPERATIONS DIVISION, CIVIL WORKS
A. J. SMET, PROGRAM BRANCH, CIVIL WORKS, CORPS OF ENGINEERS

Mr. MARSHALL. The next area which we will consider is the Ohio River Basin. There is a total of $46,628,900 budgeted for the basin.

We will insert the summary breakdown into the record, along with a statement of unobligated balances of funds already appropriated, by project.

(The matters referred to follow:)

Ohio basin

Appropriation	*Estimate for 1956*
General investigations	$140,400
Advance engineering and design	785,000
Construction	34,667,000
Operation and maintenance	11,036,500
Total	46,628,900

Ohio River Basin

Project	June 30, 1954		Mar. 31, 1955		June 30, 1955 (estimated)	
	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance
Navigation:						
Green River locks and dam 1 and 2	$95,655	$719,637	[1] $311,147	[1] $1,829,280	[1] $197,600	[1] $800,000
Green River channel improvement	0	0	0	0	15,000	90,000
Greenup lock and dam	0	0	394,267	991,602	90,000	100,000
New Cumberland lock and dam	0	0	105,010	360,879	0	50,000
Flood control:						
Vincennes, Ind	257,092	893,976	[2] 370,776	[2] 898,588	[2] 75,000	[2] 794,000
Barbourville, Ky	0	0	[3] 224,310	[3] 224,332	[3] 50,000	[3] 170,000
Jackson, Ky	0	0	0	0	0	0
Louisville, Ky	1,873,455	2,626,041	402,141	1,140,658	245,000	375,000
Maysville, Ky	616,735	945,998	600,945	968,538	5,000	25,000
Pineville, Ky	152,963	221,040	325,083	325,787	0	250,000
Bradford, Pa	0	0	0	0	0	0
Johnsonburg, Pa	0	0	34,124	253,486	15,000	140,000
Multiple purpose:						
Cheatham Lock and Dam, Tennessee	447,218	703,462	481,813	3,005,184	190,000	1,000,000
Old Hickory Lock and Dam, Tennessee	−2,563,539	−1,731,794	[4] 1,335,775	[4] 3,543,452	[4] 70,000	[4] 680,000

[1] Excludes $1,260,000 loaned to other projects.
[2] Excludes $225,000 loaned to other projects.
[3] Excludes $120,000 loaned to other projects.
[4] Excludes $2,700,000 loaned to other projects.

Mr. MARSHALL. Colonel, we will be glad to hear from you at this time with your opening statement.

GENERAL STATEMENT

Colonel PERSON. Thank you, sir.

I am John L. Person, division engineer, Ohio River division, and I would like to say that I am very happy to have the opportunity to present to the committee the story of our valley.

The Ohio River Basin, with an area of about 204,000 square miles extending from the Allegheny Mountains to the Mississippi River, has perhaps the most diversified development of any major river basin of the United States. From the basin area are produced vast quantities of agricultural products, in addition to gas, oil, coal, and other basic materials. It is also one of the outstanding industrial areas of the country. In view of the physical and economic character of the basin, and of the water-resource problems associated with frequent flooding and at times periods of low rainfall, the water-resource development program has been a significant factor in the development of this mature and well-integrated economy. The program which provides for navigation, flood control and related regulation of low flows, and development of hydroelectric power is described below.

NAVIGATION

The overall authorized program comprises complete canalization of the Ohio River; and all or parts of the Monongahela, Allegheny, Kanawha, Kentucky, Green, and Cumberland Rivers. Portions of the Little Kanawha, Muskingum, Big Sandy, and Upper Green Rivers have also been canalized but facilities on these streams are no longer operated because of cessation of commercial traffic. Completed developments included 46 locks and dams on the Ohio, and 55 locks and dams on the above-named tributaries in operation. With few exceptions these facilities provide minimum depth of 9 feet. The total canalized length of these streams is about 2,000 miles.

No extensions of the waterways comprising the overall program are authorized, but new, modern facilities to replace some of the existing obsolescent structures are authorized and, in some cases, under construction. These include construction of Hildebrand and Opekiska locks and dams, and raising dam No. 8, all on the upper Monongahela; construction of New Cumberland, Greenup, and Markland locks and dams on the Ohio; reconstruction of locks 1 and 2, and dam 2, and channel improvement on the Green River; and construction of Lower Cumberland, Cheatham, and Old Hickory locks and dams on the Cumberland River. Projects now under construction and presently scheduled dates of completion by fiscal years are: New Cumberland, 1959; Greenup, 1960; Green River Nos. 1 and 2, 1956; Green River channel improvement 1956—I should explain, gentlemen, that that is not completely ready for use. There will be additional work to be done in 1957 on fenders protecting tows from striking bridge piers, but it will be usable in 1956, which I will explain when I go into the project—Cheatham, 1958; and Old Hickory, 1958. Additional units scheduled for early construction include Hildebrand lock and dam and raising crest of dam No. 8, Monongahela River;

and Markland locks and dam, Ohio River. Long-range plans contemplate progressive replacement of other obsolescent facilities on the Ohio and middle Monongahela Rivers.

FLOOD CONTROL

The authorized comprehensive flood control plan for the Ohio River Basin combines a system of 77 tributary reservoirs with 135 local protection works, consisting of levees, floodwalls, and channel improvements, coordinated to the maximum practical extent to achieve a high degree of flood protection in the valley. Completed developments include 33 reservoirs and 43 local protection projects. Effective units of 2 additional local projects have been completed and placed in operation. The overall flood-control program is now about one-third complete and has been providing an increasing degree of flood protection as individual units have been placed in operation. However, substantial flood damages are still being experienced in many areas of the valley during large floods, and will continue to occur until the entire flood-protection plan is completed.

There are 7 additional local protection projects now under construction which are scheduled for completion within the next 2 years. Two additional local projects—Bradford, Pa., and Jackson, Ky.—are proposed for initiation as new starts with funds proposed in the fiscal year 1956 budget. There are no flood control reservoirs under construction in the Ohio Basin. Construction of two flood control reservoirs had previously been initiated, but was suspended because of the Korean emergency and has not yet been resumed.

POWER

Associated with the overall navigation and flood-control programs are proposed hydroelectric power installations totaling 1,119,000 kilowatts in connection with multiple-purpose reservoir projects. The three completed projects—Wolf Creek, Dale Hollow, and Center Hill Reservoirs in the Cumberland Basin—have a combined capacity of 459,000 kilowatts. Old Hickory and Cheatham locks and dams now under construction and scheduled for completion during fiscal year 1958 will add 136,000 kilowatts to the total installed capacity now available.

OTHER FUNCTIONS

An important corollary function served by some components of the program is the regulation of low flows in the interest of navigation, domestic and industrial water supplies and pollution abatement. No projects are authorized solely for this purpose, but several reservoirs make important contributions in this respect, and a number of others contribute in varying degree. The use of conservation, power and navigation pools for recreation is an incidental but highly attractive feature of most of the navigation and reservoir projects.

While the overall program for development of the water resources of the Ohio Basin is only partially complete, the progress in accomplishments to date is highly significant. The integrated main stem and major tributary navigation improvement not only serves the economy of the basin, but as a significant component of the Mississippi

River navigation system, contributes to the economy of the entire Nation. The nearly eightfold growth in ton-mileage on the main stem of the Ohio since canalization was completed in 1929 emphasizes the necessity of modern facilities to keep pace with current and anticipated future demands. Reservoirs capable of regulating stream flows have averted serious interruptions to navigation on the heavily used Monongahela, and have helped elsewhere. However, the most impressive contribution of completed reservoirs, and the complementary local flood protection projects, has been the great reduction in flood damages attained. An outstanding example is the operation during the flood of last October, resulting from Hurricane Hazel. Had it not been for the completed projects, that flood would have been nearly 9 feet higher at Pittsburgh, constituting the third highest of record. In that one flood, damages were prevented in the amount of about $164 million. In March of this year another flood affecting a different part of the basin—mainly in the middle-river section—would have resulted in additional damages of about $69 million had it not been for the completed parts of the program. In the effective period of operation of the projects, averaging about 8 years for all projects in operation, flood damages prevented amount to about $438 million, compared to total first costs for the projects of about $494 million. In addition, those completed units of the program which serve purposes of power development, low-flow regulation, and conservation and recreation have returned benefits estimated at some $73 million for those purposes. The effectiveness of the partially completed program during the two most recent floods was partly a fortuitous result of storm locations such that the completed works could operate to excellent effect. This emphasizes the need for uncompleted parts of the program in order to provide the diversity of control essential to assure dependable effects on the diverse storm occurrences which experience foretells are certain to recur.

Mr. MARSHALL. Thank you, Colonel Person.

Are there any questions on the general statement?

FLOOD DAMAGE

Mr. TABER. How much actual damage was there in the flood of last October?

Colonel PERSON. About $20.5 million, sir.

Mr. TABER. How much damage was there in the flood which occurred in March of this year?

Colonel PERSON. Around $16 million.

Mr. TABER. What was the damage in the floods of record?

Colonel PERSON. The 1937 flood was $410 million, sir, and if it occurred today, without any of our protective works, it would be well over $1 billion, or probably $2 billion.

GENERAL INVESTIGATIONS

Mr. MARSHALL. The first item involves a request for $140,400 for "General investigations."

We will insert in the record the tentative allocations to 11 projects, which appear on pages 1 and 2 of the justifications.

(The pages referred to follow:)

OHIO BASIN

JUSTIFICATION OF ESTIMATE

1. *Examinations and surveys*

(*a*) *Navigation studies.*—None.

(*b*) *Flood-control studies.*—The amount of $140,400 is requested for prosecution of 11 studies in the Ohio River Basin during fiscal year 1956. This amount will permit completion of 4 reports and progress on 7 others.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation, fiscal year 1956	Additional to complete after fiscal year 1956
Illinois: Embarass River at Villa Grove	$29,400	$27,900	$1,500	0
Indiana: Wabash River above mouth of White River	260,000	73,800	25,000	$161,200
Kentucky:				
Big Sandy River, Ky., W. Va., and Va	50,000	10,000	20,000	20,000
Big South Fork, Cumberland River, Ky., and Tenn	30,000	8,100	15,000	6,900
Kentucky River	160,000	12,000	20,000	128,000
Little River at Hopkinsville	17,000	15,500	1,500	0
Ohio:				
Kokosing River	33,000	6,100	15,000	11,900
Mad River above Huffman Dam	43,000	8,000	10,000	25,000
Pennsylvania:				
Allegheny River at Coudersport	21,700	20,200	1,500	0
Chartiers Creek at Washington	40,000	19,100	20,900	0
Turtle Creek	72,300	10,800	10,000	51,500
Total	756,400	211,500	140,400	404,500

WABASH RIVER ABOVE MOUTH OF WHITE RIVER

Mr. BOLAND. Under "Wabash," that is a survey of the Wabash River; is that right?

Colonel PERSON. That is correct, sir.

Mr. BOLAND. You have already had $73,800, and this $25,000 which you are now requesting will bring it up to about $100,000; will it not?

Colonel PERSON. Yes, sir; in that connection, with the money—$25,000—which we received last year, we will complete an interim survey of the portion of the Wabash above Logansport, and we will submit an interim report to the Board of Engineers for Rivers and Harbors, and the Chief of Engineers, by the end of this fiscal year. It is very nearly done now, and that report will recommend the construction of three reservoirs.

Mr. BOLAND. This really is not a valleywide survey; is it?

Colonel PERSON. It is for a portion of it. We start upstream and will work toward the mouth. These three reservoirs will have local contributions required, because there is some land enhancement involved, and the State of Indiana, in anticipation of the project being considered, has already passed an appropriation of a token amount of $50,000, as their first share toward the cooperative arrangement.

Mr. BOLAND. This $25,000 is sufficient, you think, at the present time, for the survey in which you are now engaged?

Colonel PERSON. I think so, sir. Actually, we never get enough survey money to make the progress which is needed, and I am sure you are all aware of the tremendous backlog of authorized surveys which we have, but considering the amount of funds available overall, I think we did not do too badly.

Mr. BOLAND. That is all; thank you.

Colonel PERSON. I would like to have more money, of course, bu considering what is available nationwide I am not unhappy.

ADVANCE ENGINEERING AND DESIGN

Mr. MARSHALL. The next item is "Advance engineering and design," for which a total of $785,000 is budgeted. We will insert the breakdown of this amount by project in the record at this point.

(The matter referred to follows:)

OHIO BASIN

JUSTIFICATION OF ESTIMATE

Advance engineering and design

Funds in the amount of $785,000 will be applied to advance engineering and design on 9 projects and restudy of 3 projects in the Ohio Basin. Six of these projects will be brought to the stage where construction can be initiated. The review of three projects in the "Deferred for restudy" category will be completed. The 9 projects on which planning will be accomplished have a total estimated cost of $381,354,000 and consist of 2 navigation projects, 6 flood-control projects and 1 multiple-purpose power project.

Project	Total estimated Federal cost	Allotments prior to fiscal year 1956	Tentative allocation, fiscal year 1956	Additional to complete after fiscal year 1956
Navigation projects:				
Indiana: Markland locks and dam, Indiana, Kentucky and Ohio	$69,700,000	$420,000	$125,000	[1] $69,155,000
Pennsylvania: Monongahela River Dam 8	3,300,000	43,000	50,000	[1] 3,207,000
Total, navigation	73,000,000	463,000	175,000	72,362,000
Flood-control projects:				
Indiana: Mason J. Niblack levees	2,530,000	34,000	60,000	[1] 2,436,000
Kentucky:				
Buckhorn Reservoir	7,020,000	65,000	70,000	[1] 6,885,000
Cattlettsburg	4,560,000	52,000	50,000	[1] 4,458,000
Pennsylvania:				
Allegheny River Reservoir	92,360,000	142,000	100,000	92,118,000
Reynoldsville	584,000		37,000	[1] 547,000
West Virginia: Summersville Reservoir	34,300,000	196,000	75,000	34,029,000
Total, flood control	141,354,000	489,000	392,000	140,473,000
Multiple-purpose projects including power:				
Kentucky: Lower Cumberland lock and dam, Kentucky and Tennessee	167,000,000		200,000	166,800,000
Total, multiple purpose	167,000,000		200,000	166,800,000
Reexamination of projects in "Deferred for restudy" category:				
Martins Ferry, Ohio	8,000		8,000	
Middlesboro, Ky	5,000		5,000	
Brockway, Pa	5,000		5,000	
Total, deferred for restudy	18,000		18,000	
Grand total, advance engineering and design	381,372,000	952,000	785,000	379,635,000

[1] Sufficient planning funds will be available with the fiscal year 1956 request for the necessary preconstruction planning prior to requesting funds for construction.

MONONGAHELA RIVER DAM 8

Mr. MARSHALL. In connection with dam No. 8 project on the Monongahela River, I notice your cost estimates are based on some pretty high estimates for land. While it is a relatively small amount compared to the total project cost, I wonder about the expenditure of almost $500 per acre for pastureland, for example.

Colonel PERSON. Some of the land on the upper Monongahela has been found to be extremely expensive. Now, we hope that estimate may be high, but I do not think we would be honest with the committee if we told you we thought we could get it for less than has been our experience, as to its sales price.

Mr. MARSHALL. There is a big change in your estimate of the cost of this project from 1950 to the present, from $1,820,000 to $3.3 million. Would you please explain that?

Colonel PERSON. Yes, sir. About one-third of the increase is due to the rise in price level, and the remaining two-thirds, the important increase, results from the fact that in the progress of our surveys and studies on the job, and our borings, we found that the foundation conditions which had been estimated to be normal for that river, were very bad, and we necessarily had to redesign our deep piers. That is two-thirds of our increase in cost.

MASON J. NIBLACK LEVEES

Mr. MARSHALL. I notice the statement in the planning report on the Mason J. Niblack project which reads as follows:

> The top grade of the levee is proposed 1 foot above the flood flow equal to that expected to occur on an average of once every 14 years, assuming other authorized or existing levees in the vicinity are effective.

That would seem as though there was some hedging on that one.

Colonel PERSON. No, sir. It means if the other levees hold, that the Niblack levee will protect about a foot above an ordinary 14-year flood. If some of the levees in the vicinity fail, then it will protect against a higher flood discharge, because the river will go out over the landscape.

Mr. MARSHALL. Is there some danger of some of these other levees failing?

Colonel PERSON. Yes, sir; the privately owned levees are very frequently overtopped. In fact, I happened to be district engineer at Louisville, Ky., in 1950, when we had a very critical flood fight at Vincennes, and one of the things that helped save us was the failure of the privately owned levees across the river.

Mr. MARSHALL. How many other levees are there, that are involved, above this point?

Colonel PERSON. There are some 23 on the entire Wabash River, but the number of them above Mason J. Niblack, I am not sure of. We can get that information, but those in the immediate vicinity are the ones which affect the degree of protection provided by the Niblack levee.

Mr. MARSHALL. Will you place that information into the record at this point?

Colonel PERSON. Yes, sir.

(The information requested follows:)

Completed levees along the Wabash River above the Mason J. Niblack levee comprise 2 units built by the Federal Government and 9 units built by private interests. The total length of these units is some 46 miles. In addition, there are eight authorized Federal units in the area not yet constructed. However, the levee unit most intimately related to the Mason J. Niblack levee from the standpoint of mutual effect on flood stages is the Russell and Allison levee, a private levee on the opposite side of the Wabash River from the lower end of the Mason J. Niblack levee.

BUCKHORN RESERVOIR

Mr. MARSHALL. In the planning report on the Buckhorn Reservoir, you seem to be a little doubtful about the tentative benefit-cost ratio of 1.3 to 1.

Will you explain what is involved, and how it might affect that ratio?

Colonel PERSON. The Buckhorn is, as you know, a relatively small reservoir on the middle fork of the Kentucky River, in the upper part of the Kentucky Watershed. It will control about 397 square miles of drainage area, or 73 percent of the middle fork basin.

It will be particularly effective at the little town of Beattyville, with a population of 1,500, and will help materially in reducing flooding all the way down the Kentucky.

We have had numerous Kentucky River floods, and the damage in 1937 which, of course, was the granddaddy, was $1,389,000; in 1939, 2 years later, the damages were $344,000; in 1948, $587,000; and in 1951, $348,000.

Buckhorn, we feel, would have prevented from 40 percent to 60 percent of these damages in addition, of course, to being an integral part of our overall program for the Ohio River.

However, you are correct, sir, in saying that we are not positive; and we cannot state dogmatically today that the benefit-cost ratio will be exactly 1.3 to one, because, during the course of our designing and planning, we will undoubtedly revise our cost estimate.

Mr. MARSHALL. Where would the trend be, up or down?

Colonel PERSON. I hope it will be down, sir, but until we get money to actually make our borings and get detailed design, and an actual quantity takeoff estimate, we are unable to estimate precisely the cost of the project.

SUMMERSVILLE RESERVOIR

Mr. MARSHALL. Are you likely to run into any difficulties in connection with the Summersville Reservoir project, because of coal mine developments in the reservoir area?

Colonel PERSON. Yes, sir; we are certain to run into difficulties on that.

Mr. MARSHALL. You will have to do some relocating?

Colonel PERSON. We very probably will have to relocate the dam.

Mr. MARSHALL. What effect will that have, as far as costs are concerned?

Colonel PERSON. By relocating, we will avoid the added cost of buying out the coal mines. If we tried to build it where it is sited now, I think the cost incurred by reason of the coal developments would be prohibitive. So, what we have to do is find a site where we can build it for about the same price.

Mr. MARSHALL. If you did not have the cost involved of buying the coal mines, and built it where you are now, you could built it cheaper than where you would relocate it?

Colonel PERSON. Not necessarily; no, sir. We hope to find a good site.

Mr. MARSHALL. Have the coal mine owners made any contribution toward the change?

Colonel PERSON. No, sir.

Mr. MARSHALL. You know of no serious opposition to any of the projects for which you are asking advance engineering funds?

Colonel PERSON. I know of no serious opposition to any of these, sir. Opposition may develop to Allegheny, but Allegheny and possibly Summersville are the only two where any opposition might arise.

FLOOD CONTROL PROJECTS IN OHIO

Mr. KIRWAN. Colonel, the total authorization for these projects in the Advance Engineering and Design program is $381,372,000; is that correct?

Colonel PERSON. I believe that is correct, sir.

Mr. KIRWAN. Unless I am wrong, the only thing which I see listed for Ohio is Martins Ferry in the amount of $8,000; is that correct?

Colonel PERSON. I am afraid you are right, sir.

Mr. KIRWAN. Ohio is the fourth ranking State of the Union—either third or fourth—in paying taxes.

Colonel PERSON. There is one thing, though, sir, although not physically in Ohio—Ohio is very much interested in the Markland project, and the project will benefit Ohio, of course. It will give Cincinnati, for example, an 83-mile pool.

Mr. KIRWAN. It will give Cincinnati protection, you mean, from floods?

Colonel PERSON. No, sir; it would have no effect on floods whatever. It is strictly a navigation project.

Mr. KIRWAN. I am speaking now strictly of flood control.

Flood damages in Ohio are quite heavy every year.

Colonel PERSON. Yes, sir.

Mr. KIRWAN. They are real heavy.

The fourth largest steel district of the world is located at Youngstown, Ohio, where they built two little reservoirs some years ago. I think they finished the first one in 1942. Without those reservoirs, with a war on—just think what would have happened to America if those steel plants had not been able to operate.

Colonel PERSON. That is right.

Mr. KIRWAN. After they received the funds for the second reservoir, they completed it in 90 days.

Colonel PERSON. It was a rush program; it was pushed through as a war measure.

Mr. KIRWAN. There we had the fourth largest steel center in the world, where at that time water was coming within a couple of inches of flooding the steel center, and yet here in the city of Washington we were probably paying a couple of hundred millions of dollars to the thousands and thousands of men to tell people whether they could get a girder for some church, or steel to make this item or that item.

As you know, during an emergency, the city is overcrowded, but to think we would let flood waters come within a couple of inches of putting the fourth ranking steel center of the Nation right out of business, that is terrible.

Colonel PERSON. Yes, sir; that is true.

Mr. KIRWAN. I would like for you to place in the record at this point, if you can, how much money was spent on flood control on all streams above Pittsburgh and what money was spent on the canali-

zation of the Monongahela and the Allegheny and the Ohio, showing the ones which received the most benefit from it.

When we go to put in some little flood control measure somewhere else, you will find the most opposition from Pittsburgh, a city which has had the most money spent on it—or around it—in the United States. The greatest complaint comes from the city of Pittsburgh. I do not mean the city itself, but I do mean certain interests there who are out to object to every good thing of this sort in the country.

Colonel PERSON. Yes, sir; you want the construction cost of all of the flood control reservoirs?

Mr. KIRWAN. I want the flood control cost, and the canalization of the Ohio, the Monongahela, and the Allegheny, in which Pittsburgh receives the primary benefits, being located at the headwaters of the Ohio River. Yet they are the first to object to anyone else who tries to go forward.

(The information requested follows:)

The total costs to date for all completed flood-control reservoirs above Pittsburgh, Pa., and for existing navigation improvements for each of the systems on the Monongahela, Allegheny and Ohio Rivers are:

Flood control—reservoirs	$103, 482, 513
Monongahela River navigation system	38, 410, 902
Allegheny River navigation system	16, 685, 640
Ohio River navigation system	127, 397, 640

ALLEGHENY PROJECT

Mr. KIRWAN. When do they intend to start work on this Allegheny project in Pennsylvania?

Colonel PERSON. Probably not into construction, sir, until fiscal year 1959, or 1960. I think fiscal 1960 is our first proposed construction.

Mr. KIRWAN. That will contribute quite a bit to flood protection there?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. That is fine. It is certainly needed.

Colonel PERSON. Yes, sir. It will reduce the project flood by 2.7 feet at Pittsburgh, and will affect the situation downstream.

Mr. KIRWAN. That is, when it is completed?

Colonel PERSON. Yes, sir. It will also add very materially to our low-flow regulation, and our pollution control.

Mr. KIRWAN. We need to save the water for the summer months, and have protection during the flood season.

Colonel PERSON. Yes, sir.

Mr. KIRWAN. You are doing a good job.

Colonel PERSON. Thank you, sir.

Mr. KIRWAN. The Corps of Engineers, whether it is in the California area or on the border of Maine, is doing a great job.

You are not only doing a great job now, but down through the years you have done a great job by constantly putting forward these projects to improve our country. As you just stated awhile ago, thorugh these projects, you have saved billions and billions of dollars in damages.

That is all, Mr. Chairman.

Mr. TABER. Which ones of these projects are the most important, those for which you request funds for advance engineering planning?

Colonel PERSON. Sir, that is a rather difficult question to answer, and it would have to be a matter of opinion, sir.

I would like to consider the navigation and the flood control projects in those two categories.

Mr. TABER. All right; do that.

MARKLAND LOCK AND DAM

Colonel PERSON. I consider the Markland lock and dam the most important navigationwise. It is very urgently needed in Ohio. It will replace five old dams, including dam 37, which is in bad shape, and which now creates the pool from which Cincinnati gets its water supply.

SUMMERSVILLE AND ALLEGHENY PROJECTS

On flood control, I would say the most important from a long-range view would be a tossup, sir, between Summersville and Allegheny, because Summersville gives added control in the Kanawha Basin, which now has only the control afforded by Bluestone, located in the upper watershed, and the tremendous chemical industries located from Charleston on downstream are threatened, until we get added storage up above.

On the other hand, however, Allegheny will reduce the project flood by 2.7 feet, at Pittsburgh, and progressively downstream; 2.7 feet off the top of the flood is an awful lot of water.

Mr. TABER. How would the Allegheny project reduce it? Is that a reservoir?

Colonel PERSON. Yes, sir; it is a reservoir, up in the upper stretch of the Allegheny River.

Mr. TABER. It is a dry reservoir?

Colonel PERSON. No, sir, it has a conservation pool which is badly needed to take care of ice conditions on the Allegheny during the winter months which now practically hold up navigation; and it will add very materially to the overall efforts of the States to clean up the Ohio River.

For example, our existing reservoir in the low flow period of the summer of 1953, I believe it was, contributed one-fourth of the flow of the Ohio at Cincinnati, which very few people realize. And, our structures at Berlin and Mosquito Creek contributed 80 percent of the flow to the Mahoning at Youngstown.

CUMBERLAND LOCK AND DAM

Mr. TABER. You have a large item in here for multipurpose dams?

Colonel PERSON. Yes, sir. That is the lower Cumberland lock and dam, sir, which is located below Cheatham, only about 30 miles above the mouth of the Cumberland River.

Mr. TABER. That is a rather expensive job.

Colonel PERSON. Yes, sir; that is a big job, but a very good project.

Mr. TABER. Will you produce a lot of power?

Colonel PERSON. No, sir; in comparison with some of the other power projects, it is not very big; only 130,000 kilowatts, but it will provide some very valuable flood-control benefits and navigation benefits. Navigation is the important factor. It will replace five obsolete, decrepit, small, out-of-date locks and dams, and will permit modern navigation to use the Cumberland River.

The power is needed, and will put in another 130,000 kilowatts into an area where power demands are expanding rapidly, but the primary project purpose is navigation and flood control.

Mr. TABER. You mean that it will have 130,000 installed kilowatt capacity?

Colonel PERSON. Yes, sir; installed capacity.

Mr. TABER. And, that it perhaps will produce 30,000?

Colonel PERSON. Well, better than that, sir, because you see up in the Cumberland we have Wolf Creek, Center Hill, and Dale Hollow to control low flow.

Mr. TABER. We have been educated as to what percentages to expect.

Colonel PERSON. You see, we might get better than that out of the lower Cumberland, because we would have large dams upstream so that we have a regulated river by the time we get to the lower Cumberland. As an example, if it were a natural stream we would not be in very good shape, because last summer we only had a flow of 300 second-feet in the Cumberland River at Nashville with the natural river.

However, with the releases from Wolf Creek, Center Hill, and Dale Hollow, we actually had 2,500 second-feet or 8 times the natural flow; which kept that stretch of the river from being a stinking mess, and that regulation of flow would help in making the lower Cumberland project have firmer power. I do not say that it will produce 130,000 kilowatts, but I think it will have a higher base than Wolf Creek does, for example.

Mr. TABER. There is not much navigation on the Cumberland River; is there?

Colonel PERSON. I have that exact figure right here, sir. I hate to trust my memory.

In 1953, which was the last year for which our statistics are complete, calendar year 1953, it carried 2.5 million tons, roughly, or 2,495,265, to be exact, and 289,434,000 ton-miles. That was an increase over the preceding year 1952 of 330,000 tons, and an increase of about 9 million ton-miles.

So, the navigation is appreciable, and it would be much more so if we had modern facilities.

I was at the dedication of the Cheatham lock and dam last August, and a tow came up to go through the lock during the ceremony. The operator of the lock asked the pilot of the towboat how long he figured it would take him to lock through, and he said "oh, about 20 minutes," He said "how long did it take you to get through the two locks which you had to pass coming up to this one?" And the pilot said "5½ hours."

We do have an obsolete system, sir, which is used now to the extent of 2.5 million tons, but if we had modern locks, that would expand tremendously.

CONSTRUCTION

GREEN RIVER LOCK AND DAMS NOS. 1 AND 2 AND GREEN RIVER CHANNEL

Mr. MARSHALL. The next item is "Construction." The first construction project which we have is Green River lock and dams Nos. 1 and 2. This is so closely related to the next project for channel improvement on the Green River that we will consider them together and place into the record at this point pages 9, 10, 11, 16, and 17 of the justifications.

(The pages referred to follow:)

GREEN RIVER LOCKS AND DAMS 1 AND 2, KENTUCKY (CONTINUING)

Location.—Lock and Dam 1 is located on the Green River in Henderson County, Ky., 9.1 miles above the mouth of the river, and lock and dam 2 is located in McLean County, Ky., 63.1 miles above the mouth of the river. Green River is a principal tributary of the Ohio River entering that stream about 8 miles above Evansville, Ind.

Authorization.—1909 River and Harbor Act.

Benefit-cost ratio.—1.9 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$10,000,000	
Estimated local cash contributions	0	
Estimated project cost	10,000 000	
Appropriations to June 30, 1954	800,000	
Appropriations for fiscal year 1955	4,800,000	
Appropriations to date	5,600,000	56
Appropriations requested for fiscal year 1956	4,400,000	100
Balance to complete after fiscal year 1956	0	

Physical data

	Lock and dam 1	Lock and dam 2
Navigation lock:		
Clear chamber size, feet	84 by 600	84 by 600.
Lift, do	11.8	14.3.
Upper guide wall, length, do	560	560.
Lower guide wall, length, do	503	563.
Upper guard wall, length, do	200	260.
Dam:		
Length, do	468.5	506.
Height, above foundation, do	21.0	24.4.
Type of overflow crest	Rock-filled timber crib with concrete cap.	Sheet pile cells filled with concrete.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Lands	100	December 1954.
Relocations	93	January 1955.
Reservoirs	9	February 1956.
Dams	0	May 1956.
Locks	18	February 1956.
Roads, railroads, and bridges	0	Do.
Channels	25	January 1956.
Buildings, grounds, and utilities	5	December 1955.
Permanent operating equipment	0	November 1955.
Entire project	19	May 1956.

JUSTIFICATION

Locks and dams 1 and 2 are a part of the existing project for navigation on Green River and its principal tributary, Barren River, which provides for 6 locks and dams on Green River and 1 on Barren River. Lock and Dam 1 was built in 1835 with controlling dimensions of 35.5 feet by 139.0 feet with a depth of 6.7 feet over the sill, and lock and dam 2 was built in 1895 with controlling dimensions of 36.0 feet by 141.0 feet with a depth of 5.5 feet over the sill. The existing navigation facilities are inadequate for modern towing equipment.

The early completion of this improvement will attract a tremendous outbound coal tonnage, because of the recently increased coal demand for the production of steam-electric power by two agencies of the Federal Government, the Tennessee Valley Authority and the Atomic Energy Commission. The Tennessee Valley Authority expects to obtain from the western Kentucky coalfield about 7 million tons per year by 1956 and 10 milion tons by 1960, and a substantial portion of the 1960 requirements is exptected to move by way of Green River upon completion of the modernization. The Atomic Energy Commission has a plant under construction in Ohio, the power requirements of which will be partially supplied by a powerplant now under construction near Madison, Ind. The coal requirements for this plant are about 4 million tons per year. The power producer has awarded contracts covering a period of 15 years with options to extend to 25 years to 3 coal supply companies. Two of these companies, under the terms of their contract, can supply 1,780,000 tons of coal per year from properties adjacent to Green River upon completion of the project as scheduled. Coal delivery is scheduled to begin in April 1956. Early completion of the waterway improvement will permit its use for transporting coal to these two important defense-related agencies of the Federal Government and to other newly developing civilian and defense markets. Under terms of the Atomic Energy Commission's contract with the power suppliers, savings in the cost of coal will be reflected in reduced power rates to the Atomic Energy Commission.

Fiscal year 1956: The requested appropriation of $4,400,000 will be applied as follows to complete construction of the improvement:

Lock and dam 1:		Lock and dam 2—Con.	
Dam	$38,200	Dam	$167,000
Roads	21,500	Lock	808,000
Channel dredging	62,300	Channel dredging	533,300
Buildings, grounds, and utilities	100,500	Buildings, grounds, and utilities	76,300
Lock	1,968,900	Permanent operating equipment	8,100
Permanent operating equipment	8,100	Engineering and design	155,200
Lock and dam 2:		Supervision and administration	402,600
Reservoir	50,000		

GREEN RIVER CHANNEL IMPROVEMENT, KENTUCKY (NEW)

Location.—The Green River Channel improvement is located between the mouth of Green River and mile 103. The upstream limit is 5.5 miles below lock and dam 3.

Authorization.—1954 River and Harbor Act.

Benefit-cost ratio.—1.8 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$3,440,000	
Estimated local cash contributions	0	
Estimated project cost	3,440,000	
Appropriations to June 30, 1954	0	
Appropriations for fiscal year 1955	0	
Appropriations to date	0	0
Appropriations requested for fiscal year 1956	2,275,000	66
Balance to complete after fiscal year 1956	1,165,000	100

Physical data

Channel, length, miles	103	Bridges requiring:	
Channel, depth, feet	9	Guide fenders and cells	3
Channel, width, feet	200	Guide fenders only	1
		River bends to be widened	4

Status (Jan. 1, 1955)

	Percent	Completion schedule
Channels:		
Dredging and widening	0	November 1956.
Guide fenders and cells	0	October 1956.
Entire project	0	November 1956.

JUSTIFICATION

The Green River is a principal tributary of the Ohio River entering that stream at a point about 8 miles above Evansville, Ind. The existing project for navigation on Green River and its principal tributary, Barren River, provides for 6 locks and dams on Green River and 1 on Barren River. The locks and dams were built originally from 1835 to 1905 and two of them were rebuilt in 1934. A modification to the project providing for the reconstruction of locks and dams 1 and 2 has been authorized under authority of section 6 of the River and Harbor Act of 1909. The estimated total cost for this approved modification is $10 million, of which $5,600,000 has been appropriated and made available for expenditure. Contracts have been entered into for the reconstruction of the locks and dams with locks to be placed in operation by February 1, 1956. The 1954 River and Harbor Act provides for the widening and deepening of the channel between the mouth and mile 103 to a depth of 9 feet and a width of 200 feet with suitable widening at bends, and constructing guide fenders and cells at 4 bridges.

Maximum utilization of the new lock and dam facilities cannot be obtained until the additional work of enlarging the channel and constructing the guide fenders has been completed. Pending the completion of this phase, the navigable depth will be limited and the channel constricted, particularly at bridges. This will require special maneuvering of tows and reduction in speed, especially during high river flows.

The modernized waterway will attract a large outbound coal tonnage almost immediately after construction. The indications which lead to this conclusion relate to the recent increased coal demand for the production of steam-electric power by two agencies of the Federal Government, the Tennessee Valley Authority and the Atomic Energy Commission. The Tennessee Valley Authority expects to obtain from the western Kentucky coalfield about 7 million tons per year by 1956 and 10 million tons by 1960, and a substantial portion of the 1960 requirements is expected to move by way of Green River upon completion of the modernization. The Atomic Energy Commission has under construction in Ohio a plant, the power requirements of which will be supplied by 2 powerplants, 1 of which is located near Madison, Ind. The Madison powerplant is now under construction. The coal requirements for this plant are about 4 million tons per year and two of the companies under their contract with the power producer can supply 1,780,000 tons of coal per year from properties adjacent to Green River. The coal deliveries are scheduled to begin in April 1956.

Fiscal year 1956.—The requested amount of $2,275,000 will be applied to:

Initiate channel dredging	$1,500,000
Initiate and complete construction of guard fenders and cells	500,000
Engineering and design	88,500
Supervision and administration	186,500
Total	2,275,000

Mr. MARSHALL. Colonel, would you give us a statement on these projects, and tell us about the recent adjustments that you have made in the completion schedule and the financing program.

Colonel PERSON. Yes, sir. The improvements on the Green River lock and dam 1 and 2 will replace structures which are old and completely obsolete. In fact lock 1 was built, I think, in 1835.

These locks are inadequate in depth, and in dimension, to handle the anticipated traffic, and because of their inadequate dimensions, traffic on the Green River has fallen off to a very low point.

The original appropriation to start construction of these locks and dams was, I think, based to a considerable extent on the firm contract by the Atomic Energy Commission for the delivery of coal to its steam plant at Madison.

They have a 15-year contract, extendable to 25 years. Of the 4 million tons to be used annually, they expect 1,780,000 tons to come out of the Green River Valley when these locks and dams are completed. However, the movement cannot start until they are completed, because the existing locks and dams are inadequate to handle Ohio River barges.

The channel was only authorized last summer, but your committee and the Senate committee have given me permission to borrow $300,000 from the lock and dam part of the project in order to get the channel work started this spring. I am opening bids tomorrow.

So, we will finish up the channel work just a little later than we will finish the locks.

By next summer, we will have the locks and dams operating, and the channel work substantially completed, so that modern barges and towboats can haul coal.

We have one correction which I do not think has been brought to the committee's attention, sir. I find that we had to revise our cost estimate on the channel work. It was estimated last year at $3,440,000, but in the course of our preparation of the detailed plans and specifications for the dredging, and the widening, we find that we can get by with $2,775,000 as the total cost. That will not affect the appropriation which we are requesting this year for the work, since we will need all of that money to get our channel work finished by next spring. It will affect the balance to complete after fiscal year 1956, which will be only $450,000, which we will apply to the fenders around the bridge piers.

DIRECT SAVINGS TO ATOMIC ENERGY COMMISSION

Mr. MARSHALL. How much direct savings will there be to the Atomic Energy Commission when these projects are completed?

Colonel PERSON. Their contract for coal, sir, I am told by them, has a specific reduction in cost of coal to the steam plant, at such time as they can haul it out of the Green River.

Do we have the figure for that?

Mr. BRUCE. I believe the people involved in that matter have estimated it to be about 40 cents a ton on the average.

Colonel PERSON. Forty cents a ton, with 1,780,000 tons a year, constitutes a substantial sum.

Mr. MARSHALL. I note that this one project, to complete it this year, calls for $4.4 million. Are you going to need all of the $4.4 million to complete it?

Colonel PERSON. Yes, sir; $4.4 million will complete the locks and dams.

Mr. MARSHALL. That will complete the locks and dams?

Colonel PERSON. Yes, sir.

Mr. MARSHALL. Will there be any left over if that amount is appropriated?

Colonel PERSON. There will not be any appreciable amount, sir.

We always reserve a certain small percentage for contingencies, and if they arise it will be spent. If they do not arise, the money will not be spent. For example, this spring on both lock and dam sites we were held up 6 weeks by floods. The Green River was at an unusually high flood stage, and we had to flood our cofferdams, and the river stayed up for 6 weeks, and we lost that much work. We will, additionally, be put to the expense of pumping the water back out, and cleaning out and moving the equipment back in.

Such things as that are figured in the contingency item.

POLLUTION OF OHIO RIVER

Mr. KIRWAN. Where does Cincinnati get her drinking water now?

Colonel PERSON. From the Ohio River, sir.

Mr. KIRWAN. From the Ohio?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. You said that this pool now will greatly help the situation at Cincinnati?

Colonel PERSON. No, sir; I said that the Markland Pool will help Cincinnati in that it will give her an 83-mile lake for recreation, and so forth, but I also said it replaces, among other things, the existing lock and dam 37, which forms the pool from which Cincinnati now gets her water.

Mr. KIRWAN. If you put more water into it, they are bound to get better drinking water.

Colonel PERSON. It is reasonably good water now, sir. It may help them to some extent in pumping, but you see, the raise in the pool will not actually put more water in the river; it will merely raise the river.

Mr. KIRWAN. They will still get their drinking water out of the Ohio?

Colonel PERSON. That is right.

Mr. KIRWAN. Imagine a city—one of the finest cities on earth—drinking the Ohio River water. I do not know of any stream in the six-State compact which is more polluted than the Ohio River.

Colonel PERSON. Yes, sir; Cincinnati has to have a high degree of water treatment.

TRAFFIC ON GREEN RIVER

Mr. BOLAND. What is the average width of the Green River?

Colonel PERSON. Sir, the Green River, as it goes upstream, narrows, but in the stretch concerned, we are going to widen it in places in order to give a minimum width of 200 feet.

In some places it is now less than that. We do have three or four bends on which we have to do a little work, which is in the channel part of the project.

Mr. TABER. How much traffic is there now?

Colonel PERSON. Very little now, because the locks and dams are completely inadequate to take the Ohio River type barges, but we have an assured traffic of at least 1.78 million tons of coal as soon as these locks and dams are completed, and the TVA states that by 1960 they will have an annual demand for 10 million tons of coal for their steam plants, of which a large portion will come from these fields.

There are, of course, other coal users, and the two Government agencies will create a demand for further use of the river.

Mr. TABER. The Green River runs directly into the Ohio, does it not?

Colonel PERSONS. Yes, sir; just about at Evansville, Ind.

Mr. TABER. Has it ever had much traffic before?

Colonel PERSONS. Yes, sir. The canalization which was started in 1835, sir, provided a very important artery of traffic during the pioneer days, but with the growing size of barges and towboats, and the flexibility of railroads, the traffic has dwindled. It was only, I think, about 84,000 tons last year.

Mr. BOLAND. Where is the heaviest amount of traffic on the Green River?

I notice in brown the work required to complete the project after fiscal year 1956. How heavy will the traffic be from the place where the red-colored stops and the brown starts?

Colonel PERSON. It will be reasonably heavy all the way up, sir.

Mr. BOLAND. Why will it be?

Colonel PERSON. There are coal fields all the way up, sir.

GREENUP LOCKS AND DAMS

Mr. MARSHALL. Next is the Greenup locks and dams, and we will insert pages 21 and 22 of the justifications into the record at this point.

(The pages referred to follow:)

GREENUP LOCKS AND DAM, OHIO RIVER—KENTUCKY AND OHIO (CONTINUING)

Location.—In Ohio River, 341 miles below Pittsburgh, Pa., in Greenup County, Ky., and Scioto County, Ohio, and near the municipality of Greenup, Ky.

Authorization.—River and Harbor Act of March 3, 1909.

Benefit-cost ratio.—1.65 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$65,000,000	
Estimated local cash contributions	0	
Estimated project cost	65,000,000	
Appropriations to June 30, 1954	371,000	
Appropriations for fiscal year 1955	2,050,000	
Appropriations to date	2,421,000	4
Appropriations requested for fiscal year 1956	4,000,000	10
Balance to complete after fiscal year 1956	58,579,000	

PHYSICAL DATA

Locks:
Main lock: 110 by 1,200 feet.
Auxiliary lock: 110 by 600 feet.
Normal lift: 32 feet.

Dam:
Type: Nonnavigable, gate controlled.
Length: 1,298 feet.
Damming height: 35 feet.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Lands and damages	2	December 1959.
Relocations, not started		June 1960.
First stage construction, cofferdam for locks	20	June 1955.
Locks, not started		June 1958.
Dam, not started		October 1959.
Reservoir, removing existing structures; not started		June 1960.
Channel dredging, not started		June 1958.

JUSTIFICATION

The project will provide for the replacement of four existing locks and dams on the Ohio River and one on the Big Sandy River, all of which will have reached or approached the end of their useful economic life by the time the Greenup project can be completed. The existing facilities are not adapted to accommodate large modern tows which must be separated for lockage. Forty percent of the total traffic time required in moving cargo along the reach of the river served by locks 27 through 30, a distance of 60 miles, is consumed in passing through the 4 locks. Of the time required to pass the 4 locks, approximately 25 percent represents time lost waiting for other tows to clear the locks. With the proposed new facilities, almost all such traffic delays will be eliminated and locking time for modern transportation equipment will be reduced from approximately 6 hours to about 20 minutes.

The reach of the Ohio River which is affected by the construction of the Greenup project is the busiest on the Ohio River and one of the busiest on the entire inland waterway system. In 1953 the tonnage moved through locks 27 to 30 was 16.3 million tons. It included 28 million barrels of crude oil and petroleum products originating or terminating in the area. This tonnage represented more than 30 percent of all petroleum traffic on the Ohio River. In the same year over 7 million tons of coal traffic originated or terminated in the area, amounting to 23 percent of the total Ohio River coal tonnage. The efficient and uninterrupted river transportation of such commodities as coal, petroleum, steel products, and chemicals, to, from and through this area is highly important in normal times and the importance is greatly increased in time of national emergency.

Traffic on the Ohio River has more than doubled in the past 15 years and all indications are that the growth in traffic will continue for many years and will be accelerated by the rapid industrial expansion now taking place in the Ohio River Basin. Construction and maintenance of adequate navigation structures to accommodate modern towing equipment is essential to the continued development of the area and to meet the growing need for economical transportation of bulk and finished products.

Fiscal year 1956.—The requested amount of $4 million will be applied to:

Initiate construction of the locks	$3, 190, 000
Complete land acquisition of lock site	106, 000
Relocate gas transmission lines at lock site	330, 000
Engineering and design	144, 000
Supervision and administration	230, 000
Total	4, 000, 000

Initiation of the lock construction at the beginning of fiscal year 1956, following completion of the cofferdam in fiscal year 1955 with available funds, will provide an orderly and economical schedule of construction. Completion of land acquisition at the lock site and relocation of the gas transmission lines will be necessary

to proceed with construction of the locks. The presently proposed program will expedite completion of this essential facility in the overburdened Ohio River navigation system and eliminate future rehabilitation and excessive maintenance costs on the existing obsolete structures.

REPLACEMENT OF OLD LOCKS AND DAMS ON THE OHIO RIVER

Mr. MARSHALL. Since this is part of an overall project replacing the old locks and dams on the Ohio, would you first give us a statement on the overall project, and then a statement on this individual project?

Colonel PERSON. I would be very happy to, sir. May I put up my other chart which shows the program?

Mr. MARSHALL. Yes, sir.

Colonel PERSON. The project for canalization of the Ohio was authorized in 1910, on the basis of an estimate that when completed it might carry as much as 13 million tons a year.

It was completed in 1929, and by that time it already carried 22 million, in spite of the fact that we were roundly criticized for making that fantastic estimate of 13 million tons. In calendar year 1953 it carried 62 million tons, which is 1.5 times as much as the Panama Canal carried in the same year.

Of the 46 locks and dams which were built or completed in 1929, 23 are from 35 to 50 years old, 21 between 25 and 35 years old, and only 2 under 25 years old.

They were built with 600-foot locks, 110 feet by 600 feet, and there, again, people said that we were crazy to build those enormous locks which were far too big for any traffic on the Ohio. Now, 30 percent of our tows will not go through this 600-foot lock and have to be broken up for double lockages.

Also, we used the old-fashioned wicket-type dam for a very good reason in the early days. The traffic was almost entirely downstream, and during high-water periods you could lower the dam and coast down without going through the locks.

Today the upstream traffic is a little better than 40 percent of the entire traffic, and the percentage is growing.

So, it will be just about even.

We contemplate a replacement program, which we anticipate will take about 20 years, under which we will end up with a system of 21 locks and dams instead of 46, each with a 1,200-foot lock, and an auxiliary 600-foot lock; so that instead of a tow taking 6 or more hours to pass through 4 or 5 old-fashioned locks, it will go through a new lock in about 20 minutes.

NEW CUMBERLAND

Money was appropriated last year to begin work on the program at New Cumberland, which will take out old locks and dams 7, 8, and 9 in the stretch of the river which is used for the purpose of hauling coal to and from the Pittsburgh area. Lock 7 is in danger of failure due to a slide in the mountain behind it. We are taking what we admit is a calculated risk in not going to heavy expense to try to correct that condition, because we think we can keep going until we get through with the New Cumberland project. However, the Wheeling steel people are rather unhappy that we are not taking

extraordinary measures to stop the slide, because they say if that lock went out of business, their steel industry would also be out of business.

GREENUP

Our next project is at Greenup. It is in the second heaviest traveled section of the river, with coal, petroleum products, steel, chemicals, and so forth being handled in that stretch. It will wipe out these four old locks. Both projects have a very good benefit-to-cost ratio.

MARKLAND LOCK AND DAM

The next authorized project, or replacement project, is the Markland lock and dam which we discussed briefly under the advanced engineering and design program.

We have submitted for consideration by the Board of Engineers for Rivers and Harbors and the Secretary of the Army, a recommendation to improve the situation at Louisville, Ky., which is a serious bottleneck, and which will be just about saturated by somewhere in the early 1960's, especially in view of the 4 million tons of coal a year coming up to the big steam plant at Madison.

NEW RICHMOND

At New Richmond, we have also submitted a recommendation for its authorized replacement. We do not expect to build the program all at once. If we can start one a year, we can complete the program in 20 years, which is a reasonable length of time, I think, for a valley of this importance.

RIVER TRAFFIC

Incidentally, I am certain that it cannot be successfully denied that the reason for the tremendous growth of industry in the valley has been the availability of water, and the availability of water transportation. Seven billion dollars worth of new industry has come into the valley since 1950, in the last 5 years, attracted by, as I said, the need for water supply and for water transportation.

COMPARISON OF OHIO AND MISSISSIPPI TRAFFIC

Mr. KIRWAN. Which serves the most industry, the Mississippi or the Ohio, before they both meet?

Colonel PERSON. There is more tonnage carried on the Mississippi, sir, than on the Ohio, by, I think, about 11 million tons, if you consider the stretch from Baton Rouge to New Orleans as an inland waterway.

Mr. KIRWAN. I mean where they meet at Cairo, Ill.

Colonel PERSON. The Ohio by far.

Mr. KIRWAN. That is the part I mean.

Colonel PERSON. If you exclude the oceangoing traffic, sir, we carry more than the Mississippi.

Mr. KIRWAN. That is, if you exclude the oceangoing vessels down at New Orleans?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. The Ohio itself carries more tonnage than the whole Mississippi if you take the stretch from Baton Rouge to New Orleans out?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. Where it joins the Mississippi at Cairo, which river carries the most water? The Mississippi or the Ohio?

Colonel PERSON. Sir, could I tell a story in connection with that off the record?

Mr. KIRWAN. Yes, sir.

(Discussion off the record.)

Mr. KIRWAN. I am glad to get that information that there is more water put into the Mississippi by the Ohio than there is in the Mississippi when they meet at Cairo.

Colonel PERSON. Of course, that will vary at different times of the year, but in the 1937 flood—Jim, do we have here with us the figures on the amount of flow?

Mr. BRUCE. It was something near 2 million second-feet.

Colonel PERSON. If my memory serves me correctly it was about 1.9 million.

We are not too proud of our contribution, however, to that flood, but we did make it, sir.

Mr. KIRWAN. Thank you, Colonel.

Mr. MARSHALL. You mentioned that you are carrying 1.5 times as much traffic on the Ohio River as is being carried by the Panama Canal.

Colonel PERSON. Yes, sir. The Panama Canal in 1953 carried about 40 million tons, and we carried 62 million.

CALCULATION OF TONNAGE CARRIED

Mr. TABER. I am wondering how you compute this tonnage. Suppose you have 3 or 4 barges going from Lousiville to Madison; do you count that as an item toward the tonnage on the river? They might have a tonnage of two or three thousand tons each.

Colonel PERSON. Yes, sir; a single tow would ordinarily carry from 20,000 to 25,000 tons. A tow came up the river just a month ago with 30,000 tons.

Mr. TABER. Each barge in a tow will carry about two or three thousand tons; will it not?

Colonel PERSON. Yes, sir.

Mr. TABER. If you had 3 barges, and they carried 9,000 tons, you would count that toward the entire tonnage on the river?

Colonel PERSON. Toward the tonnage; yes, sir.

Mr. TABER. Even though it only traveled 25 or 30 miles?

Colonel PERSON. I am very happy you brought that up, sir, because the figure of ton-mileage is probably a more significant figure than the figure of tonnage.

Mr. TABER. That is what I would think.

Colonel PERSON. We carried nearly 13 billion ton-miles on the Ohio in 1953.

Mr. TABER. How much was carried on the Mississippi?

General ITSCHNER. The number of ton-miles on the Mississippi River during 1953 was 23.7 billion.

Mr. TABER. What was that figure?

General ITSCHNER. 23.7 billion.

Mr. TABER. What was the tonnage on the Ohio?

Colonel PERSON. It was 11.75 billion ton-miles. We had 11,757 million. I am sorry that I said nearly 13 billion. I should have said nearly 12 billion.

Mr. TABER. On that basis, the Mississippi overall has double the tonnage of the Ohio.

Colonel PERSON. There is another point to consider there, sir; some of our traffic on the Ohio is of most vital importance, although it only travels a short distance.

The coal carried on the Ohio to our steel plants and to the steam electric plants is vital to the economy of the entire valley. Our installed capacity of steam power increased nine times since 1942. The average haul for coal and coke is only 86.7 miles. The immense tonnage in coal makes up half of the tonnage of the river. That immense tonnage, times the 86 miles average movement, does not produce very high ton-mile figures, so that it is not safe to judge either by the total tonnage or by the ton-mileage.

You have to consider both of those factors, and also to consider what products move these short distances, and what products move the long distances.

Our chemicals usually come from the gulf coast and Texas, all the way up the length of the Mississippi at Cairo, and then wind up probably at Charleston or along the Ohio. Our petroleum products originate in Texas, and some in Louisiana, and some in Illinois, and they come up the river to Ashland, most of them, on to Pittsburgh, where they are refined, and the products are shipped up and down the river.

So, it is not a simple thing to analyze the importance of commerce on a river, except that the order of magnitude, I think, is shown by the tonnage figure.

GREENUP LOCK AND DAM

Mr. MARSHALL. Will you give us a statement now, Colonel, on the Greenup lock and dam?

Colonel PERSON. Yes, sir.

The Greenup lock and dam is about 340 miles below Pittsburgh. It is a replacement structure to provide a modern set of locks, 1,200 feet by 110 feet, with an auxiliary 600 by 100 lock. It will be a high-lift-type dam, which will create a 61.8-mile pool, extending upstream from Greenup, which is not far downstream from Huntington, W. Va.

It was authorized under section 6 of the 1909 River and Harbor Act, and has a benefit-cost ratio of 1.65 to 1.

The funds which we received during the past fiscal year, $2 million, to initiate construction, have been applied to some relocations, and land acquisition, and to actual construction of the coffer dam inside which the lock for which we are asking funds in the 1956 appropriation will be constructed. The cofferdam contract is well underway. Work had to be suspended because of the March floods, and also because of a short strike, but the contractor is doing an excellent job, and I think it will be finished in June, certainly in ample time to get this going.

Mr. MARSHALL. What tonnage was handled by this portion of the river during the last year?

Colonel PERSON. In the last year of record, sir, approximately 16.3 million tons.

That amount of tonnage was handled in calendar year 1953.

Mr. MARSHALL. Would you insert in the record a 10-year table showing the tonnage of each of the last 10 years?

Colonel PERSON. I shall be happy to.

(The information requested is as follows:)

The tonnages for the last 10 years which passed each of the locks and dams Nos. 27, 28, 29, and 30, the existing structures being replaced by Greenup locks and dam are:

Year	Millions of tons passed			
	Lock and dam No. 27	Lock and dam No. 28	Lock and dam No. 29	Lock and dam No. 30
1944	6,850,000	10,250,000	10,730,000	9,510,000
1945	6,222,020	9,267,177	9,960,000	8,760,000
1946	5,278,937	8,365,850	8,950,000	7,860,000
1947	6,269,649	9,489,043	10,417,459	8,848,040
1948	6,880,425	9,631,115	10,790,050	9,854,192
1949	7,084,306	8,448,507	10,326,602	9,389,451
1950	9,784,157	11,743,275	12,796,278	11,735,915
1951	10,915,637	13,841,053	13,580,779	14,129,496
1952	11,026,138	14,524,799	14,563,197	14,475,203
1953	12,210,877	18,410,061	18,482,211	16,277,762

COST OF OHIO RIVER LOCK AND DAM REPLACEMENT PROGRAM

Mr. TABER. How much do you figure this lock and dam will cost?

Colonel PERSON. The Markland cost estimate is $69.7 million, and the Greenup lock and dam is $65 million, sir.

Mr. TABER. How many of these locks and dams are you going to have altogether?

Colonel PERSON. We will wind up with a total of 21, sir, and they will involve the complete new construction of these original 3, and of these 6 here. At Louisville, we are going to keep the one existing lock, and build a second lock, and shift the dam. We will use part of the existing dam, but part of it is so expensive to maintain and operate that we are going to replace it with a different section.

Mr. TABER. If each of these locks and dams cost $60 million, 21 of them would cost $1,260 million.

Colonel PERSON. Well, sir, as we get further downstream, the cost will be less. Our estimated cost is something under $900 million, which is a lot of money—$882,660,000 for the total program.

Mr. TABER. How can you get a benefit-cost ratio to justify that?

Colonel PERSON. Well, sir, the savings in transportation costs last year were 7.5 times the amount which we spent on amortization of the unamortized portion of the investment made to date, the interest on that unamortized portion, and all of our costs of operations and maintenance. This gave us a 7.5 to 1 annual benefit, as compared to the annual cost. That is a fact.

We estimate at Greenup that our benefit-to-cost ratio will be 1.65 to 1, sir.

NEW CUMBERLAND LOCK AND DAM

Mr. MARSHALL. The next project is the New Cumberland lock and dam on the Ohio River. We will insert pages 28, 29, and 30 of the justifications in the record at this point.

(The pages referred to follow:)

New Cumberland Locks and Dam, Ohio River (Continuing)

Location.—The site of the locks and dam is in Jefferson County, Ohio, and Hancock County, W. Va., on the Ohio River near Stratton, Ohio, about 54.4 miles below the head of the river at Pittsburgh, Pa.

Authorization.—1909 River and Harbor Act.

Benefit/cost ratio.—1.44 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$49,800,000	
Estimated local cash contribution	0	
Estimated project cost	49,800,000	
Appropriations to June 30, 1954	244,000	
Appropriations for fiscal year 1955	1,000,000	
Appropriations to date	1,244,000	2
Appropriations requested for fiscal year 1956	7,000,000	17
Balance to complete after fiscal year 1956	41,556,000	

PHYSICAL DATA

Dam:
Type: High lift, gated-crest, nonnavigable
Length: 1,309 feet
Gates: 10–100-foot Sidney gates; 2–100-foot submergible lift gates
Locks: Parallel chambers, 110 by 1,200 feet riverward chamber; 110 by 600 feet landward chamber
Lift: 22.6 feet

Status (Jan. 1, 1955)

	Percent	Completion schedule
Lands and damages	7	December 1957.
Relocations	8	February 1958.
Pool preparation (reservoirs)	0	June 1959.
Dam	0	December 1958.
Locks	0	November 1957.
Channel	0	December 1958.
Entire project	1	June 1959.

JUSTIFICATION

The Ohio River is one of the most important inland waterways of the world. It is the vital link between the northern industrial States, such as West Virginia, Pennsylvania, and Ohio, and the South and southern gulf ports. The products which it bears in vast quantities are iron and steel; coal and coke for the manufacture of iron and steel; fuel oil, gasoline, and other petroleum products; sulfur, limestone; and iron and steel scrap. Tonnages of traffic are great and have been constantly increasing. For example, in 1945 annual tonnage was about 34 million; in 1950 it approached 50 million tons and in 1953 it reached 62 million tons, of which over 14 million tons consisting mainly of coal, sand and gravel, oil and gasoline, and iron and steel products, passed through the project area.

The basic iron and steel industry is dependent upon river transportation via the Ohio River. Steel manufacturers at Pittsburgh, Pa., Weirton, W. Va., Steubenville, Ohio, Wheeling, W. Va., etc. use the river extensively to ship their finished products. The heavy concentration of steel production below Pittsburgh receives practically all of its requirements of coking coal in barges which traverse the Ohio and much of its limestone and other important operating supplies are delivered in the same manner. Their dependence upon river transportation is not merely a matter of operating economy, but if river shipments were halted for any appreciable length of time, other methods of freight carriage could not begin to supply the tonnage requirements of the steel producers.

All of the coal and other raw materials for steel which move from the mines and other sources of supply above Pittsburgh to the important steel producing areas in West Virginia, Ohio, and Kentucky must pass through Ohio River locks and dams 7, 8, and 9. The same is true of important finished products manufactured in the industrial sections of Pennsylvania, and of other commodities which are transported in both directions. These locks and dams are the keys to navigation in the area and any interruptions to service through them would paralyze commerce and production in one of the most important industrial centers of the United States.

Locks 7, 8, and 9, which were constructed in the period 1904–14, are inadequate, not only because they are single locks of limited length, but also because they are in badly deteriorated condition from an operating point of view. It is possible that any one of them may have to be closed for repairs at any time because of a major failure, which would be disastrous for the essential traffic which moves through these sections of the Ohio River. The landward wall of the lock chamber at lock 7 is one example of the need for extensive reconstruction, if the present structures are to continue in service. This wall has been slowly, but progressively, failing since 1926 with sustained riverward movement. Should failure become complete, costly repairs would result to a structure obsolete in design, and prolonged suspension of navigation might result through the only lock available at this dam.

New Cumberland locks and dam will replace existing locks and dams 7, 8, and 9, which have neared the end of their economic life and cannot be expected to long continue to operate. Replacement of these obsolete locks will not only decidedly improve navigation conditions on the important Ohio River but will insure noninterrupted traffic in the most important industrial center of the United States.

Fiscal year 1956.—The requested amount of $7 million will be applied to:

Continue acquisition of land	$500,000
Continue relocations	813,700
Initiate construction of locks	5,080,000
Engineering and design	150,000
Supervision and administration	456,300
Total	7,000,000

The earliest possible completion of the project is essential due to the inadequacy and badly deteriorated condition of existing locks and dams 7, 8, and 9, which the project will replace. Progress as scheduled is also essential in order not to interfere with the Ohio Edison Co. program for erection of a steam powerplant at the upper end of the project site. Use of Ohio Edison Co. land is contemplated for disposal of large quantities of excavation required for construction of the locks and this work must be accomplished in fiscal year 1956 to meet the company's scheduled requirements for use of that land. Land acquisition and relocation work also must continue as rapidly as funds will allow in order to keep pace with construction schedules.

Mr. MARSHALL. We will appreciate a brief statement from you, Colonel, in regard to this project.

Colonel PERSON. Yes, sir; as I said a few moments ago, New Cumberland will replace old lock and dams 7, 8, and 9, which are in a very poor state of repair, and one of which, lock 7, is in danger of collapsing due to the sliding of the hillside behind it.

There was $1 million appropriated in the last fiscal year, with which we initiated the land acquisition, and with which we are initiating the relocation of the Ohio State Highway No. 7, which must be relocated before we can get in to work.

With the $7 million which is in the budget for next year, we will let the actual contract for the locks, and we will complete acquiring the site, and will actually get moving.

We estimate the land acquisition in 1956 to cost $500,000; relocations, $813,700, and then $5,080,000 for initiating construction of the locks, and the balance for engineering and design, supervision and administration.

The removal of the highway is a fairly typical project, where the State has plans for a 4-lane highway, but the highway which we are taking out is only a 2-lane highway. So, we are actually building and paving a 2-lane highway, but preparing the subbase for future paving of a 4-lane highway, with funds contributed by the State of Ohio.

In other words, it is costing the Federal Government only the money cost of the 2-lane highway, although we are doing the work on the other.

Mr. KIRWAN. Do you feel that the full appropriation which you are requesting here in the amount of $7 million is needed for this work?

Colonel PERSON. Yes, sir; it is needed.

Mr. KIRWAN. You will be able to use most of it effectively in the next fiscal year?

Colonel PERSON. Yes, sir.

FREIGHT RATES

Mr. TABER. Have you any idea what the freight rates are on your major traffic items?

Colonel PERSON. Yes, sir; we have that information, but I do not have it on hand right now, sir, but we can get it.

Between the various points, it would vary, of course.

Mr. TABER. Furnish the committee with information as to the coal rate, as one item on one stretch of the river, and the rail rate on that same item for the same period.

Colonel PERSON. Yes, sir.

Suppose I use it in the stretch which the Greenup Dam will affect.

Mr. TABER. I do not care which one you use.

Colonel PERSON. Yes, sir.

(The information requested follows:)

Following are water and rail rates on coal between Huntington, W. Va., and Cincinnati, Ohio, two points on the Ohio River between which transportation will be affected by the Greenup project:

Published water rate for 700 tons minimum (American Barge Line Tariff, ICC 145), per short ton	$0.69
Published rail rate (Chesapeake and Ohio Tariff, ICC 13164), per short ton	3.1136

Mr. TABER. Is your benefit-to-cost ratio figured on the reduction that will come as a result of the shippers being able to use the river transportation rather than the rail transportation?

Colonel PERSON. No, sir; our benefit-to-cost ratio is only based upon the savings resulting from three factors. If we considered the difference in transportation cost, comparing water and rail, it would be far higher than the 1.65 to 1 that we have.

We consider three things, sir. Considering the New Cumberland project, sir, we will save the cost of rebuilding three existing dams, which we would have to rebuild anyway. I think the Government is committed to maintaining navigation on the Ohio. If we did not build this we would have to build three of the ordinary type to replace it. Then we have a very substantial saving to navigation resulting from the very greatly decreased time involved due to the fewer lockages involved, and the longer locks.

Mr. TABER. Your benefit-to-cost figure is for the savings that result from the use of the new locks, rather than the cost of the transportation?

Colonel PERSON. That is correct, sir. Another factor is the savings to navigation resulting from the lower tow resistance due to the greater depth of the pool. We will have a deeper pool. With the present barges and present tows every foot of deeper water you can get decreases the resistance to the movement of the tow, and that is a factual saving. If we based it upon our difference of cost of rail and water transportation this would be about 7½ to 1 instead of 1.65 to 1, sir.

TONNAGE

Mr. MARSHALL. Colonel, what tonnage was handled by this part of the river for the last year for which you have a record?

Colonel PERSON. New Cumberland, sir?

Mr. MARSHALL. Yes.

Colonel PERSON. 14 million, sir.

Mr. MARSHALL. Would you place in the record the information for each of the last 10 years?

Colonel PERSON. Yes, sir.

(The information is as follows:)

The tonnages for the last 10 years which passed each of the locks and dams Nos. 7, 8, and 9, the existing structures being replaced by the New Cumberland locks and dam are:

Year	Millions of tons passed			Year	Millions of tons passed		
	Lock and dam No. 7	Lock and dam No. 8	Lock and dam No. 9		Lock and dam No. 7	Lock and dam No. 8	Lock and dam No. 9
1944	7,450	6,480	6,480	1949	7,950	6,280	5,970
1945	5,850	5,070	5,070	1950	11,200	9,380	8,500
1946	5,850	4,460	4,460	1951	11,780	10,400	9,100
1947	8,000	4,300	4,220	1952	10,500	10,000	8,900
1948	8,510	6,770	5,900	1953	14,050	11,200	10,200

VINCENNES, IND.

Mr. MARSHALL. Our next project is Vincennes, Ind., which is a local flood-protection project. We will insert in the record pages 34 and 35 of the justifications.

(The information is as follows:)

VINCENNES, IND. (CONTINUING)

Location.—Local protection for Vincennes, Ind., located in Knox County on the left bank of the Wabash River at mile 128 above the mouth.

Authorization.—1946 Flood Control Act.

Benefit-cost ratio.—5.0 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$4,210,000	
Estimated local cash contributions	0	
Estimated project cost	4,210,000	
Appropriations to June 30, 1954	2,088,000	
Appropriations for fiscal year 1955	500,000	
Appropriations to date	2,588,000	61
Appropriations requested for fiscal year 1956	584,000	76
Balance to complete after fiscal year 1956	1,038,000	

PHYSICAL DATA

Levees:
- Average height: 12.5 feet
- Length: 4.4 miles

Floodwalls:
- Average height: 7 feet
- Length: 0.8 mile

Relocations:
- Second Street Bridge alteration and approaches
- B. & O. railroad bridge alteration
- C. & E. I. railroad bridge alteration
- P. C. C. & St. L. railroad bridge alteration

Pumping plants: 5 pumping plants and other appurtenances

Status (Jan. 1, 1955)

	Percent	Completion date
Relocations	0	December 1956.
Levees and floodwalls	54	April 1957.
Pumping plants	0	June 1957.
Entire project	35	Do.

JUSTIFICATION

The project will protect the principal business, industrial, and residential areas of Vincennes, Ind., against recurring floods on the Wabash River. The need for additional flood protection for the city of Vincennes was demonstrated by the 1943 and 1950 floods, both of which overtopped the existing wall which was built by the city with WPA labor. The city was saved from flooding by costly emergency measures and the use of troops during both floods. The value of property subject to damage in the city is estimated at about $79,560,000. The project is contiguous to the completed Brevoort levee protection for over 50,000 acres of rich agricultural land, which area would also be flooded if the existing Vincennes protection works failed. The industries of the city include steel fabrication, the manufacture of batteries, paper products, glass products, shoes, and food canning plants. The funds requested will allow an orderly construction program and will provide early protection for the city. Annual flood control benefits for the project are estimated at $995,000. Completion of the project at an early date is needed to prevent recurring flood losses. The city of Vincennes has expended approximately $28,000 for lands and has agreed to continue their share of the required cooperation as the work progresses.

Fiscal year 1956.—The requested amount of $584,000 will be applied to:

Continue construction of levees and floodwalls	$349, 000
Initiation of construction of pumping plants by continuing contracts	130, 000
Installation of permanent operating equipment	1, 000
Engineering and design	4, 000
Supervision and administration	100, 000
Total	584, 000

The funds will permit the award of a continuing contract for the construction of five pumping plants and complete the construction of section B, part 2a, and alterations to the B. & O. railroad bridge.

Mr. MARSHALL. We would be glad to have your statement, Colonel.

Colonel PERSON. Mr. Chairman, this project has a very high benefit-to-cost ratio, 5 to 1. I can speak feelingly about it, because in January of 1950 as the district engineer of Louisville I ran into a flood fight there. If I had not been lucky enough to be able to arrange quickly for a battalion of troops from Fort Knox the town would have been wiped out. The river was a foot higher than the top of the old levee and flood wall they built with WPA money back in the 1930's.

We were half way between disaster and catastrophe there for about 10 days.

The project is underway, as you can see on the map. We have completed most of the frontline levee, and with the 1956 money we plan to complete the flank levees and start the pumping plants. That will leave only the back levees and the completion of the pumping plants after 1956.

We have had a little trouble and delay at Vincennes on the matter of the availability of rights-of-way. The city has given formal assurance that we would get them, but it is going to run into fairly heavy expenses, around $250,000, in getting the rights-of-way for the next section.

Back not long before Christmas, the State of Indiana was planning to relocate a State highway. If the city had been able to talk the State into building it south of town, then the State would have acquired the rights-of-way necessary and would have put its highway on top of our levee. Unfortunately, after 2 or 3 months of study by the State highway department they found that it would be a fine idea except for the fact that the highway would not lead anywhere, so that was turned down, and the city is now resigned to that fact.

We have a formal letter from the mayor, of about a month ago, saying that he would start delivering the rights-of-way by the 1st of May.

There is another problem involving the B. and O. Railroad relocation. If it is relocated under present plans they will have slightly less than the standard clearance between the railroad track and a very large building. The city is trying to get the B. and O. to waive that right-of-way requirement so they will not have to spend about $40,000 in remodeling the building. That is in process. The mayor has talked with the president of the railroad personally, who has indicated sympathy, but said he would like to have one more conference between the mayor and his regional man before he makes a decision.

It is a very good project, sir.

Mr. TABER. Will these bridge alterations be paid for by the Federal Government or by the railroad?

Colonel PERSON. They will be paid for by the Federal Government, sir, since it does not involve a betterment to the railroad. Any

betterments we provide the railroad pays for, but since they would not have had to relocate if it had not been for the flood wall it is a Federal cost. Any betterment would be paid for by the railroad. The rights-of-way for them are bought by the city.

Mr. TABER. How much did you say you were raising the levee?

Colonel PERSON. 6 feet, sir.

Mr. TABER. For 4 miles?

Colonel PERSON. Yes, sir; roughly.

Mr. TABER. That is what it says here, 4.4 miles.

Colonel PERSON. That is a 4.4-mile levee. There is an 0.8-mile concrete wall, and 5 pumping plants and the relocations.

Mr. TABER. Is the levee a dirt levee?

Colonel PERSON. Yes, sir; the levee is earth, and the 0.8-mile wall will be concrete.

Mr. TABER. Where is that? Is that in the center of town?

Colonel PERSON. That runs right down through the center of town, sir, between the railroad and the river where there is not room for a levee.

Mr. TABER. This does not show more than one railroad going across.

Colonel PERSON. The only major railroad is the B. & O., sir, but there are two other tracks coming in. There is the C. and E. I. and the St. Loo, that go through.

Mr. BRUCE. The C. and E. I. and the Pennsylvania come in.

Colonel PERSON. That is not a bridge. That is just moving tracks or raising tracks. You are right, sir; there is only 1 bridge involved, but there are 3 relocations. The other two relocations involve raising the tracks to get over the levee.

Mr. TABER. All right.

BARBOURVILLE, KY.

Mr. MARSHALL. The next project is the Barbourville, Ky., flood protection project. We will insert pages 39 and 40 of the justifications in the record.

(The information is as follows:)

BARBOURVILLE, KY. (CONTINUING)

Location.—Local protection for Barbourville, Ky., located in Knox County, in Kentucky, on the right bank of Cumberland River, 635.2 miles above the confluence of the Cumberland River with the Ohio River.

Authorization.—1950 Flood Control Act.

Benefit-cost ratio.—1.82 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$1,650,000	
Estimated local cash contributions	0	
Estimated project cost	1,650,000	
Appropriations to June 30, 1954	65,000	
Appropriations for fiscal year 1955	350,000	
Appropriations to date	415,000	25
Appropriations requested for fiscal year 1956	600,000	62
Balance to complete after fiscal year 1956	635,000	

PHYSICAL DATA

Levees:
Average height: 15 feet.
Length: 18,660 feet.
Floodwalls:
Average height: 5 feet.
Length: 290 feet.
Pumping plants: 4 pumping stations with attendant intercepter sewers.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Levees and floodwalls	0	February 1957.
Pumping plants	0	June 1957.
Entire project	0	Do.

JUSTIFICATION

The seriousness of the flood problem at Barbourville, Ky., is characterized by the frequent flooding and heavy losses sustained. Damages resulting from a flood equal to the flood of record (1946) under the present stage of development would amount to $790,000 while those resulting from the January-February 1951 flood would be $592,000. The town is located in an important coal and lumber producing area and is an important trading, railroad, and educational center of southeastern Kentucky. Annual flood-control benefits for the project are estimated at $172,000. The city of Barbourville has voted bonds to purchase the necessary land rights, and has agreed to furnish the required local cooperation as work progresses.

Fiscal year 1956.—The requested amount of $600,000 will be applied to:

Completion of unit 1 embankment and drainage facilities	$81, 600
Initiation of construction of unit 2 embankment, floodwall and drainage facilities	340, 600
Initiation and completion of pumping plant outlets for unit 2	68, 700
Initiation of construction of the pumping plants	50, 000
Engineering and design	18, 600
Supervision and administration	40, 500
Total	600, 000

Completion of unit 1 embankment and drainage facilities will provide some protection to the town of Barbourville against the currents of the Cumberland River. Construction of unit 2 embankment, floodwall, and drainage facilities should be initiated as the next logical step in the construction of the project. The pumping-plant outlets for unit 2 are scheduled for construction in fiscal year 1956 in order to permit completion of unit 2 embankment the following year. The construction for the pumping plants should be initiated in fiscal year 1956, as scheduled, to provide a usable project as soon as possible after completion of the unit 2 embankment and floodwall sections.

Mr. MARSHALL. Will you give us a statement on this project, please?

Colonel PERSON. Yes, sir. Barbourville is a relatively small local protection project up on the Cumberland River. It protects the town of Barbourville, a town of about 3,000.

This consists of 18,660 feet of levee, only 290 feet of wall, and 4 pumping plants.

There are some 2,750 people living in the area protected, with $7 million in property value. It is a town that has been damaged very, very frequently. It has suffered some damage almost every year for the past 30 years.

Starting back in 1918, to take some typical years, there was $143,000 actual damage, which would amount to $583,000 under present conditions of development and prices.

Then in 1929 if that flood had happened today it would be $554,000.

There was $409,000 damage in 1939.

There was $750,000 damage in 1946, which is the flood of record.

Again, there was $562,600 damage in 1951.

The design provides for the protection against the flood of record, the 1946 flood, with, of course, a 3-foot freeboard.

The benefit-to-cost ratio is 1.82 to 1.

The costs have dropped. Last year we estimated a cost of $2,190,000, and it is now $1,650,000. The reduction is due to refinements in design and a reduction of our estimates due to the experience we had on a similar job at Pineville, on experience in bidding. As I say, it has a relatively high benefit-to-cost ratio for a local protection job.

Mr. MARSHALL. Did construction start about March, as it was scheduled?

Colonel PERSON. No, sir; it did not. There was some difficulty in getting the rights-of-way. The city officials had trouble in buying without excessive further delay, so they called on us to condemn part of the property. They had the money. There was no doubt of their willingness to do it, but the legal complications delayed it. Finally we condemned. We filed proceedings the 29th of March. We estimate now we will let the contract about the 25th of May.

Mr. MARSHALL. The planning report states the cost to local interests will be $265,000. It also mentioned that the city has issued bonds in the amount of $130,000. How is the difference of $135,000 to be financed?

Colonel PERSON. Sir, they have not sold all the bonds. They have authority to sell them but they do not want to sell them and start paying interest until they can see we are about in need of it. We do not expect any trouble in getting it, sir.

Mr. KIRWAN. This is a local project?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. The river is a navigable stream? It comes under the Flood Control Act as a navigable stream?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. That is all.

Mr. TABER. I am wondering about your plans on this job. The river takes a curve here. It seems to me, if the big map is anything to go by, a shortcut across that curve of the channel of the river would do the trick without all of this several miles of levee or seawall.

Mr. BRUCE. That was considered, Mr. Taber, in the survey report. That topography may be a little misleading. That is high ground in that nose. The cut across that was studied, and it was found to be more expensive than the plan adopted.

Mr. TABER. I should think that would have been more effective than this would be.

Colonel PERSON. Well, sir, there again we get a very high degree of protection this way. To get the same degree of protection that way would have cost more money. The topography goes up very rapidly in that nose of the river. It would have been a tremendous cut.

Mr. TABER. That is all I have.

Colonel PERSON. We have done that, sir, on the next project at Jackson.

EFFECT OF LATE START

Mr. MARSHALL. They are getting started in May instead of in March as planned. What effect will that have on the completion date? Would it set your whole schedule back about 3 months?

Colonel PERSON. It may set it back a couple of months, sir. We are hoping not. If they start in March the time of organizing and getting in at that time of the year is a little different. Actually, this year we had high water and it will not hurt us much, because the water was high in March.

Mr. TABER. Is the money that was appropriated obligated?

Colonel PERSON. All except these two contracts, sir, which were to be let in March and now will not be let until May. We will have a carryover of probably $289,900, which includes a loan of $120,000 to other projects. Exclusive of that we would have a carryover of $170,000 which would apply, of course, to carrying on the work next year, sir.

For the future awards there is no problem anticipated. They know now that they have that original problem of rights-of-way licked. The balance of the land which they have to acquire is mostly agricultural land and the owners are pretty reasonable. That will not be any problem.

JACKSON, KY.

Mr. MARSHALL. The next project is at Jackson, Ky., a local flood-protection project. We will insert in the record pages 44 and 45 of the justifications.

(The information is as follows:)

JACKSON, KY. (NEW)

Location.—Local protection for Jackson, Ky., located in Breathitt County, on the North Fork of the Kentucky River, 305 miles above the Ohio River.

Authorization.—1944 Flood Control Act.

Benefit-cost ratio.—1.4 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$260,000	
Estimated local cash contributions	0	
Estimated project cost	260,000	
Appropriations to June 30, 1954	2,000	
Appropriations for fiscal year 1955	12,000	
Appropriations to date	14,000	5
Appropriations requested for fiscal year 1956	246,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Channel:
Length: 150 feet.
Width (base): 200 feet.
Depth: 60 feet.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Channel	0	January 1956.
Entire project	0	Do.

JUSTIFICATION

Jackson is the county seat of Breathitt County and has a population of about 2,000 (1950 census). It is the trading center of a large surrounding agricultural area with mainline railroad and highway connections to other cities in this section of the State of Kentucky. The local protection project, as presently planned, will reduce flood heights at Jackson from 4 to 6 feet on all floods, resulting in the elimination of 75 percent of the estimated average annual flood damages. Major floods at this city occurred in 1927, 1939, and 1948. Recurrence of these floods under present conditions would result in substantially greater flood losses. In addition to the damages caused by these major floods, considerable loss has been caused by several minor and more frequent floods. A stage of 28 feet above which damage begins was exceeded 8 times, between 1940 and 1948. The maximum flood of record occurred in 1939 with a recorded stage of 42.1 feet (equivalent to stage of 43.1 feet, present datum). Jackson is located near the headwaters of the Kentucky River and due to the precipitous stream slopes and small drainage areas, floods reach their peak stages within a few hours after heavy rainfall. Accordingly, there is always danger of loss of life, particularly if the peak stages occur during darkness with little or no warning. The city area affected at maximum flood is about 70 acres. Located in this area are about 100 residences and 25 business and commercial establishments. Annual flood control benefits for the project are estimated at $14,000.

Fiscal year 1956.—The requested amount of $246,000 will be applied to:

Initiation and completion of channel excavation and placement of riprap	$211,400
Engineering and design	5,800
Supervision and administration	28,800
Total	246,000

The funds requested will complete the project, which will permit lowering of the flood peaks on the Kentucky River at and in the vicinity of Jackson, Ky., from 4 to 6 feet and provide protection for commercial and residential areas.

Mr. MARSHALL. Give us a statement on this project, Colonel.

Colonel PERSON. Yes, sir. This is a small project which will be completed with the funds requested. It is a cutoff.

This protects the little town of Jackson, Ky., which has been badly hurt several times. The cutoff proposed, which will permit the excess flow to pass directly through the cutoff, will reduce the floods by some 4 to 6 feet.

The property value in the area is high for a small area like that, and with this $246,000 we can give them a relatively high degree of protection.

Mr. MARSHALL. I notice an "existing tunnel" on your map. Is this cutoff a tunnel?

Mr. BRUCE. There is an old tunnel there, a millrace, through that short stretch.

Mr. MARSHALL. Do you have reasonably firm assurance that the local interests will secure the necessary rights-of-way for this project?

Colonel PERSON. Yes, sir; the rights-of-way are relatively small which are required. We are quite confident they will carry out the assurance they have given us.

Mr. MARSHALL. This will be completed with the funds for this fiscal year?

Colonel PERSON. Yes, sir.

Mr. MARSHALL. Are you going to need all of the funds?

Colonel PERSON. As far as I know, yes; of course, until we actually let the contract we will not know exactly how much it will cost, but we think we have a good estimate. It is a good, sound, engineering estimate and I think it will be about right.

LOUISVILLE, KY.

Mr. MARSHALL. The next project is at Louisville, Ky. We will insert pages 49 and 50 of the justifications in the record.

(The information is as follows:)

LOUISVILLE, KY. (CONTINUING)

Location.—Local protection for Louisville, Ky., located in Jefferson County on the left bank of the Ohio River, 607 miles below Pittsburgh, Pa.

Authorization.—1938 Flood Control Act.

Benefit-to-cost ratio.—3.3 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$24,023,000	
Estimated local cash contributions	0	
Estimated project cost	24,023,000	
Appropriations to June 30, 1954	23,548,000	
Appropriations for fiscal year 1955	0	
Appropriations to date	23,548,000	98
Appropriations requested for fiscal year 1956	[1] 475,000	100
Balance to complete after fiscal year 1956	0	

[1] As revised by H. Doc. 156. Original request was $1,275,000.

PHYSICAL DATA

Levees:
Average height: 12 feet.
Length: 12.8 miles.
Floodwalls:
Average height: 14 feet.
Length: 4 miles.
Pumping plants: 13 pumping plants and other necessary appurtenances.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Levees and floodwalls	98	November 1955.
Pumping plants	84	September 1955.
Entire project	92	November 1955.

JUSTIFICATION

The project will protect business, industrial, and residential areas of Louisville, Ky., against recurring floods on the Ohio River. This is the largest urban area in the State of Kentucky subject to flood damage. The maximum flood of record

(1937) inundated about one-half the area of the city, caused the evacuation of about 175,000 people from the flooded area, and direct damage then valued at $53,656,000. Due to the expansion of industry during and since World War II, a recurrence of the 1937 flood stages would undoubtedly result in much greater flood damages under present conditions. Annual flood-control benefits for the project are estimated at $3,549,000. Completion of the project at an early date is needed to prevent recurring flood losses. The city of Louisville and Jefferson County have spent approximately $2,500,000 for lands and relocations and have agreed to continue their share of the required cooperation as work progresses.

Fiscal year 1956.—The requested amount of $475,000 will be applied to:

Complete construction of Beargrass Creek pumping plant	$178,400
Engineering and design	35,000
Supervision and administration	51,600
Emergency outlets and remedial work to pumping plants	210,000
Total	475,000

The recommended appropriation for fiscal year 1956 is needed to complete the construction of the Beargrass Creek pumping plant and provide emergency controls on outlets through levees and floodwalls and perform certain remedial work on pumping plants. All supply contracts for the Beargrass Creek pumping plant have been awarded and construction of this pumping plant is well advanced on a continuing contract basis. The Beargrass Creek pumping plant is located at the upstream end of the project and will be the largest plant required for the project. The plant itself forms a part of the line of protecting works and a gap will exist in the line of protection until the plant is completed. This gap permits inundation, during flood periods, of a considerable city area and, during great floods, the floodwater can enter the portion of the city which is otherwise protected by levees and walls. The Beargrass Creek pumping plant will provide flood-period drainage for the runoff of Beargrass Creek and a large sewered area. In order to realize the benefits from the expednitures on this project, it is vital that this plant be completed at the earliest possible date.

Mr. MARSHALL. We would be glad to hear your statement on this project.

Colonel PERSON. This is another project with a very high benefit-to-cost ratio, 3.3 to 1. It is complete as far as the levee and wall section is concerned.

The work remaining to be done is to complete the big Beargrass Creek pumping plant, which takes care of the flow from Beargrass Creek and pumps it over the wall during periods when closure has to be effected. There are some alterations to the pumping stations, improvements in the pumps themselves, and correction of some settlement that occurred.

The funds requested will complete this project. We have reduced the cost since last year by the elimination of what was known as section AA which came in on the plan just where you see the No. 3 pumping plant. There is a gap in here. Section AA was out under the bridge and around the Belknap Hardware Co. and Louisville Gas & Electric plant and several other commercial installations. The town wanted it very badly at one time but kept cooling off because of the fact that the people to be protected were cooling off on their desire to contribute the rights-of-way. Obviously if they did not want it badly enough to contribute the rights-of-way we did not want to build it.

We have a formal statement from the mayor by which the city withdraws its request for that section. It will not endanger the balance of the work, since the only problem in the event of the projected flood would be to build 300 feet of 2-foot sandbag cutoff on one side and 300 feet on the other side, which is a very minor proposition, we are very happy to save the money.

The Beargrass Creek plant is somewhat behind schedule because the flood of March inundated the work site. Even after the flood went down they were unable to pour concrete for some time because the bank was too saturated to get the crane up. We feel that they will get back on schedule and we will get that pumping plant completed, I am sure, before the next flood season.

Mr. KIRWAN. The $475,000 will complete it?

Colonel PERSON. Yes, sir.

UNOBLIGATED BALANCE

Mr. TABER. You have quite a large unobligated balance.

Colonel PERSON. We have a carryover, sir, unobligated at the present time, we estimate, of $245,000.

Mr. TABER. Will it not be more than that?

Colonel PERSON. The unexpended balance is $375,000. The budget request plus the $375,000 gives $850,000 for next year.

The only things unobligated, sir, are the supervision and administration costs and the purchase of some gages, some cleanup work around the pumping plants, and remedial work at the pumping plants. That work will be completed by the time the Beargrass Creek pumping plant is completed.

The main reason for our large unexpended balance was the flood which shut the big job down.

Mr. TABER. This job is largely a pumping job, is it not?

Colonel PERSON. Well, sir, there is a levee and flood wall. There is a 12.8-mile levee and 4 miles of concrete wall and 13 pumping plants. The pumping plants merely get the interior storm water pumped over the wall when the sewers are closed by the high water.

Mr. TABER. I believe that is all.

Colonel PERSON. As you know, sir, Louisville got very badly damaged in 1937. There was $54 million damage in the 1937 flood. If that flood occurred with the present development of the city, which has expanded terrifically during and since the war, with, for example, the rubber plants and the Ford assembly plant and the General Electric plant, it would be $170 million.

MAYSVILLE, KY.

Mr. MARSHALL. The next project is Maysville, Ky. We will insert in the record pages 54 and 55 of the justifications.

(The information is as follows:)

MAYSVILLE, KY. (CONTINUING)

Location.—Local protection for Maysville, Ky. in Mason County on the left bank of the Ohio River, 408 miles below Pittsburgh, Pa.

Authorization.—1938 Flood Control Act.

Benefit-cost ratio.—1.35 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$6,660,000	
Estimated local cash contributions	38,700	
Estimated project cost	6,698,700	
Appropriations to June 30, 1954	4,320,000	
Appropriations for fiscal year 1955	800,000	
Appropriations to date	5,120,000	77
Appropriations requested for fiscal year 1956	1,540,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Levees:

Average height: 26 feet

Length: 6,400 feet

Floodwalls:

Average height: 19 feet

Length: 7,800 feet

Pumping plants: Pumping plants with attendant interceptor sewers. Total capacity 106,800 g. p. m., 5 plants

Status (Jan. 1, 1955)

	Percent	Completion schedule
Levees and floodwalls:		
Section 1, complete		
Section 2, complete		
Section 3, complete		
Limestone Creek barrier and extension, complete		
Section 4	17	December 1955.
Drainage structures: Limestone Creek culvert and gatewell, complete		
Pumping plants:		
Structures	0	December 1955.
Equipment	45	April 1955.
Electric power	0	October 1955.
Entire project	60	December 1955.

JUSTIFICATION

The project is a unit in the general comprehensive plan for flood control and other purposes in the Ohio River Basin. It will provide complete protection to the city of Maysville, which has a population of about 8,600, against disastrous floods on the Ohio River. The flood of January 1937 (maximum of record) inundated about 65 percent of the area proposed for protection to an average depth of about 12 feet, and made refugees of approximately 4,280 persons. Damages resulting from a flood equal to that of 1937, under the present state of development of the city, would amount to approximately $3,885,000. Completion of the project as scheduled is necessary to provide protection at the earliest practicable date to the citizens now paying taxes levied by the city to retire bonds issued to meet the requirements of local cooperation and to derive maximum benefits from the considerable Federal investment in the project.

Fiscal year 1956.—The requested amount of $1,540,000 will be applied to:

Complete construction of sec. 4 (floodwall)	$858, 400
Complete construction of pumping plant structures	489, 000
Supply electric power to pumping plants	17, 700
Provide relief wells along wall and levee	75, 000
Engineering and design	5, 800
Supervision and administration	94, 100

The funds requested for fiscal year 1956 will complete the project.

Mr. MARSHALL. Will you give us a statement on this project, Colonel?

Colonel PERSON. Yes, sir. Maysville is another local protection project, sir. It has a good benefit-to-cost ratio of 1.35 to 1.

The floodwall itself is substantially complete. The funds requested for the next year are to actually complete the floodwall and to start and complete the pumping plants.

We were able at Maysville, even though the project was not nearly complete, to save $20,000 in damage by throwing up temporary barriers and pumping one little creek in this last month's flood.

We are going to have a carryover of unexpended funds partly because of the fact that the high water did saturate the soil and keep us from working for a while, but also because we ran into a little trouble driving piles past a textile mill. The old plant was 50 years old and started to settle and crack. We shut down 2 or 3 weeks and then started up again. We are just about over that hump. We had to go cautiously and carefully to keep from crumbling the mill.

The funds we have requested will complete that project.

Mr. MARSHALL. The planning report notes an addition of $68,000 to the project cost to provide relief wells not previously anticipated?

Colonel PERSON. Yes, sir. The reason for that is to give us an added factor of safety by taking care of leakage. I think it is wise insurance against possible trouble on a project of this size.

Mr. MARSHALL. Since the Federal Government has put so much money into this why should that cost not be borne by the local interest, just as lands for ponding areas are?

Colonel PERSON. Well, sir, these are really a part of the structure. They are put in purely for the purpose of added safety of the wall and the levee and are really just as much a part of the project as the pumping plants or the levee itself.

Mr. MARSHALL. How much behind schedule are you?

Colonel PERSON. Not seriously, sir. We have relatively little wall to complete. Although we are behind the contract schedule it will be done well in advance of the next flood season.

Mr. KIRWAN. The last several projects are in the completion stages, are they not?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. You are just finishing them up?

Colonel PERSON. Yes, sir.

Mr. MARSHALL. Mr. Taber?

Mr. TABER. How big a town is this?

Colonel PERSON. It has 8,600 residents, and is a center of commerce and industry for quite an area. There is about $23.3 million worth of property in the town.

Mr. TABER. This is not a very high ratio of benefits to costs.

Colonel PERSON. It is about 1.35, sir, which I think appears low only by comparison with the very high ones at Vincennes and Louisville.

Mr. TABER. That is all.

PINEVILLE, KY.

Mr. MARSHALL. The next project is Pineville, Ky. We will insert in the record pages 60 and 61 of the justifications.

(The information is as follows:)

PINEVILLE, KY. (CONTINUING)

Location.—The local protection project for Pineville, Ky., is located in Bell County, Ky., along the Cumberland River between mile 653 and 655. (Mile 0 is the confluence of the Cumberland River with the Ohio River). The project consists of a system of levees and flood walls along the left bank of the Cumberland for the protection of the main town and a levee on the right bank for the protection of the Pineville suburb Wallsend.

Authorization.—1936 Flood Control Act.

Benefit/cost ratio.—1.81 to 1.0.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$1,720,000	
Estimated local cash contributions	0	
Estimated project cost	1,720,000	
Appropriations to June 30, 1954	674,000	
Appropriations for fiscal year 1955	230,000	
Appropriations to date	904,000	53
Appropriations requested for fiscal year 1956	816,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Levees:
Average height: 11 feet.
Length: 4,300 feet.
(Pineville section: 800 feet.)
(Wallsend section: 3,500 feet.)

Flood walls:
Average height: 8 feet.
Length (Pineville section): 6,000 feet.

Pumping plants: 3 pumping plants with attendant intercepters (2 plants in the Pineville section and 1 in the Wallsend section).

Status (Jan. 1, 1955)

	Percent	Completion schedule
Levees	0	June 1956.
Flood walls	48	March 1956.
Pumping plants	0	June 1956.
Entire project	33	Do.

JUSTIFICATION

The project is designed to protect the principal business and residential areas of Pineville against the flood of record, plus 3-foot of freeboard. The seriousness of the flood problem at Pineville, Ky., is characterized by the frequent flooding and

heavy losses sustained. Damages resulting from a flood equal to the 1946 (flood of record) flood under the present stage of development would amount to $2,300,000, while those resulting from the January–February 1951 flood would be $241,000. The 1951 flood flooded 252 dwellings and seriously hampered business operations. The people were cared for in schools, churches, and city buildings. Annual flood-control benefits for the project are estimated at $189,100. The city has authorized a total bond issue of $547,000 and has kept their land-acquisition program ahead of the construction.

Fiscal year 1956.—The requested amount of $816,000 will be applied to:

Completion of the flood walls	$252, 200
Completion of embankment	231, 300
Completion of pumping plants	286, 300
Engineering and design	2, 000
Supervision and administration	44, 200
Total	816, 000

Completion of these items will complete the project and provide the city of Pineville, Ky., with protection against a flood somewhat higher than the flood of record.

Mr. MARSHALL. We would be glad to have a statement from you on this project.

Colonel PERSON. Yes, sir. Pineville, again, is a local protection project which is relatively small compared to some of the others. It is along the Cumberland River in Kentucky. It involves levees and flood walls along the left bank of the Cumberland to protect the main part of the town and a levee on the right bank to protect the Wallsend section, which is a suburb of the town.

The project will be completed with the funds requested. It has 4,300 feet of levee, 6,000 feet of wall, and 3 small pumping plants.

There have been 11 damaging floods in the last 37 years. If the flood of record occurred now, it would cause some $2.3 million damage. About 4,000 people are residents of the town, and there are 500 outside workers who come in to work, and the property is valued at $7.4 million.

The heaviest flood of record was in 1946. We protect against that flood with a 3-foot freeboard downstream from the Pines Creek Bridge and a 5-foot freeboard upstream. The reason for the difference in the freeboard is that it is very possible if a big flood occurred we would get a swellhead caused by the bridge. It is cheaper to take care of it that way than to raise the bridge. Also, that will insure that if overtopping should occur it would occur downstream instead of upstream where the force of water would tear the town apart.

Mr. TABER. You have quite a large unexpended balance. Is this all contracted for?

Colonel PERSON. No, sir; the pumping plants have not been put under contract. Actually the Wallsend section across the river is not under contract because we have not got the money. The part on the right bank is under contract except for unit 2 and the pumping plant. Unit 2 will be under contract early in May.

The unexpended carryover which we have, which does look rather large, is due to delay in getting rights-of-way that is to define the limits of the borrow area. Local interests always have more trouble getting them than they think they will. There are legal reasons and dickering with property owners involved. They have gotten that squared away and we advertised for bids on that section on the 29th of March. We do not anticipate any additional delays.

BRADFORD, PA.

Mr. MARSHALL. The next project is Bradford, Pa. We will insert in the record pages 66 and 67 of the justifications.

(The information is as follows:)

BRADFORD, PA. (NEW)

Location.—The city of Bradford is in northern McKean County, Pa., at the junction of the East and West Branches of Tunungwant Creek, a tributary of the upper Allegheny River. The project is located along Tunungwant Creek and the lower portions of its principal tributaries, East Branch and West Branch, and will provide local protection for Bradford and vicinity.

Authorization.—1950 Flood Control Act.

Benefit-cost ratio.—1.1 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$8,100,000	
Estimated local cash contributions	0	
Estimated project cost	8,100,000	
Appropriations to June 30, 1954	64,000	
Appropriations for fiscal year 1955	80,000	
Appropriations to date	144,000	2
Appropriations requested for fiscal year 1956	500,000	8
Balance to complete after fiscal year 1956	7,456,000	

PHYSICAL DATA

Channels:

Improvement of 18,000 feet along Tunungwant Creek.

Improvement of 5,000 feet along East Branch.

Improvement of 7,700 feet along West Branch.

Adjustment of mouths and lower reaches of Foster Brook, Bolivar Run, and Kendall Creek to improved main channel conditions. (Limited improvements of Tunungwant Creek and tributaries have been made by local interests.)

Status (Jan. 1, 1955)

New start:	*Completion schedule*
Unit 1	June 1956.
Unit 2	June 1958.
Unit 3	November 1958.
Unit 4	June 1959.
Entire project	Do.

JUSTIFICATION

Bradford and vicinity, which has a population of more than 20,000 and within a radius of 10 miles a population of about 35,000, is the main business center of the surrounding area and has long been known for its importance in producing oil, oil refining, manufacturing, trade and transportation. The oilfields after 50 years of production still produce annually over 12 million barrels of the highest grade crude oil. The producers are now engaged in intensive scientific methods of secondary oil recovery. About 540 acres, 27.4 percent of the total area of the city of Bradford, is subject to flooding. The 1947 flood affected 27 industrial, 350 commercial, and 1,350 residential properties, 14 churches, and other establishments in Bradford and the valley downstream to Foster Brook. One death was attributed to this flood and 13 persons suffered injury or shock. The proposed improvement would produce real and important intangible benefits by preventing loss of life and bodily injury to residents, eliminating serious fire hazards during floods when oil-covered water spreads through the town, and preventing unsanitary conditions caused by polluted floodwater. Average annual benefits for the project are estimated at $438,000, all flood control. Construction

of this project at the earliest date practicable is considered necessary in order to prevent future disruptions of the industry and commerce of the area and to prevent the recurrence of large flood losses, both tangible and intangible. Local interests have been active in helping to solve the flood problem and have made limited improvements currently valued at $1,082,700. Local interests have also furnished assurances of willingness and ability to provide the required local cooperation currently estimated at $1,940,000.

Fiscal year 1956.—The requested amount of $500,000 will be applied to:

Initiate and complete construction of unit 1	$388, 600
Engineering and design	65, 000
Supervision and administration	46, 400
Total	500, 000

The funds requested will complete unit No. 1 of the channel improvement and will provide partial protection to adjacent areas.

Mr. MARSHALL. Will you give us a statement on this project, Colonel?

Colonel PERSON. Yes, sir; this is a local protection project, mainly a channel improvement. It protects the town of Bradford, a town of about 20,000 people up in Pennsylvania near the New York border.

The Tunungwant Creek is an upstream tributary of the Allegheny. The project involves the improvement of the channel of the Tunungwant River, for about 18,000 feet. About 5,000 feet of the east branch of the creek and 7,700 feet of the west branch are involved, and there is improvement of the place where 3 little tributaries enter.

In the flood plain are about 6,700 residents, and about 4,800 outside workers are employed in 475 industrial properties, with values of about $13.8 million.

The flood of record was in 1947. It caused at that time a damage of $1.7 million. If it occurred at this time the damage would be $2,652,600.

The design will provide protection against flood flows from 5 to 30 percent above the flood of record.

Mr. MARSHALL. This project has a rather low benefit-to-cost ratio of 1.1 to 1.

Colonel PERSON. Yes, sir; it does. It has, however, been cleared by the Bureau of the Budget and it has this to recommend it, sir: The local people have done as much as they can afford to do to help themselves. They have done work on their own that reduces the amount the Federal Government has to do by about $1 million. Then they have assured us that they will have no difficulty in getting the rights-of-way; and, in fact, I had a letter just the other day reaffirming that.

They have formed the Bradford District Flood Control Authority which combines several communities into one taxing agency so that they can issue bonds and be in a position to supply the rights-of-way. So they are putting up a good bit of their own money to assist in the project.

Mr. MARSHALL. Has the work actually been started on construction?

Colonel PERSON. No, sir; this is 1 of the 2 new starts in my division.

Mr. MARSHALL. One of the two new starts?

Colonel PERSON. Yes, sir.

Mr. MARSHALL. The project is not scheduled for completion until the end of 1959. Will any of the work scheduled for 1956 result in benefits by itself?

Colonel PERSON. Yes, sir; everything we do in the channel-clearing projects helps to some extent. You will not get anything like complete relief until it is all done, but every place we can get the water away faster will help a little.

Mr. MARSHALL. You have had others that have had a much higher benefit-to-cost ratio than 1.1 to 1.

Colonel PERSON. That is correct, sir.

Mr. MARSHALL. This will cost $7,456,000 to complete after this fiscal year?

Colonel PERSON. After this year, yes.

As I say, the fact that they have already made improvements that will cut our cost by $1 million, and are willing to spend another $1,940,000 is, I think, one of the factors that led to its being selected, for the high degree of local cooperation.

Mr. KIRWAN. You are thoroughly convinced, Colonel, that the local people have done a good job?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. You should know, for you have been in the business a long time. This is one of the projects on the upper tributaries, which will have a bearing on the Ohio River?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. And all down the line?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. That is all.

Mr. BOLAND. Is this primarily just for the protection of Bradford, Pa., itself?

Colonel PERSON. Primarily for the protection of Bradford and immediate surroundings.

Mr. BOLAND. What percentage would you say would pertain to the protection of Bradford?

Colonel PERSON. I would say that the property values protected would be 100 percent in the Bradford area.

Mr. BOLAND. $1,940,000 is the local contribution. Is that considerable for a project of that kind and of this cost?

Colonel PERSON. Yes, sir; it is. That plus the $1 million they have already spent to help on this is $2.9 million against an $8 million Federal cost. There are very few local protection projects where the lands and rights of way are that high.

Mr. BOLAND. They will spend $2.9 million?

Colonel PERSON. Yes, sir. They have already done work themselves which would have cost us $1 million, and they are going to spend another $1.9 million. That is a high degree of local cooperation.

Mr. BOLAND. You think that is one reason why the Bureau of the Budget put it in the budget this year, because of the local contribution?

Colonel PERSON. It was one factor, I know, sir, that led us to recommend it; and I feel quite probably it was a factor that led them to let it stay in.

Mr. BOLAND. Thank you.

JOHNSONBURG, PA.

Mr. MARSHALL. The next project is Johnsonburg, Pa. We will insert in the record pages 71 and 72 of the justifications.

(The information is as follows:)

JOHNSONBURG, PA. (CONTINUING)

Location.—The borough of Johnsonburg is in Elk County, Pa. at the confluence of the East and West Branches of the Clarion River, which is a tributary of the Allegheny River. The project is located along the West Branch and Silver Creek and will provide local protection for the West Johnsonburg and Rolfe areas of the borough. East Branch Reservoir provides protection for that part of the community situated along the East Branch and below the junction of the branches.

Authorization.—1944 Flood Control Act.

Benefit-cost ratio.—2.65 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$750,000	
Estimated local cash contributions	0	
Estimated project cost	750,000	
Appropriations to June 30, 1954	54,000	
Appropriations for fiscal year 1955	300,000	
Appropriations to date	354,000	47
Appropriations requested for fiscal year 1956	396,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Levees:
Average height: 8 feet.
Length: 1,844 feet.
Floodwalls:
Average height: 8 feet.
Length: 441 feet.
Closure structures: Number, 2.
Channels:
Improvement 2,900 feet along west branch.
Improvement 1,620 feet along Silver Creek.
Pumping plant: Portable pump, capacity of 3,300 gallons per minute.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Unit 1 (West Johnsonburg area): Levee-floodwall system	5	November 1955.
Unit 2 (supplemental West Branch Channel improvement): Channel	0	May 1956.
Unit 3 (Silver Creek Channel improvement for Rolfe area): Channel	0	June 1956.
Entire project	9	Do.

JUSTIFICATION

Johnsonburg is the main business and manufacturing center of the surrounding area and most of the population is affected either directly or indirectly by floods. Dwellings, public buildings and a number of commercial, industrial and transportation facilities are located in the flood area. During the July 1942 flood, the maximum of record, 85 dwellings, 8 commercial and 2 public buildings suffered damages amounting to approximately $375,000 (July 1954 values). For the period from 1889 to date the area to be protected has suffered approximately $4,150,000 in direct-flood damages (July 1954 values). As recent as May 1953, a major flood occurred with damages estimated at $333,000. Completion of the project at an early date is desirable to prevent future disruption to business and industry in the area and to prevent recurring flood losses.

Fiscal year 1956.—The requested amount of $396,000 will complete the project and will be applied to:

Complete construction of levee—floodwall system, unit 1, West Johnsonburg area	$29,700
Initiate and complete supplemental West Branch Channel improvement, unit 2	230,100
Initiate and complete Silver Creek Channel improvement for the Rolfe area, unit 3	90,000
Engineering and design	2,000
Supervision and administration	44,200
Total	396,000

Mr. MARSHALL. We would like to have your statement on this project, Colonel.

Colonel PERSON. This project has a more attractive benefit-to-cost ratio, 2.65 to 1.

This is, again, a local protection project for a city of about 5,000 people. It supplements the partial protection which the East Branch of the Clairon River Reservoir has provided, and we took into account the existence of the reservoir in designing the project.

This involves channel improvement along about 2,900 feet of the West Branch and 1,600 feet along Silver Creek, plus 1,844 feet of 8-foot levee and 441 feet of 8-foot wall, 2 closure structures and a portable pump. The amount of water to be kicked over the wall from the interior rainfall is small enough so that we did not need to install a permanent pumping station.

This will give a good degree of protection. The property value in the area is about $2,340,000.

The maximum flood of record occurred in 1942, when damage at the time was $166,000, and would be today $375,000.

They were damaged again in 1953 and 1954. In those years they suffered damages of over $300,000.

We have changed our cost estimate slightly. It was $778,000 last year, but we have designed the channels a little differently and changed the bridge section a bit and cut it to $750,000.

Mr. MARSHALL. Has that resulted in the change of your benefit-to-cost ratio?

Colonel PERSON. Yes, sir; one part of it.

The local costs are now $127,000 plus $3,400 a year maintenance cost That is a reduction from last year's testimony, which indicated $336,000. The reason for that is that last year it was expected that local interests would have to replace one of the bridges on which U. S. 21 crosses the creek. At that time they felt that the bridge would have to be replaced and that that would be considered as part of the local contribution to the project. I think we testified last year that that was the only item of local cooperation that was not finally worked out.

In the meantime two things have happened. First, we find that by juggling a little bit we can use the bridge in its present location. Second, the State has come in and rehabilitated it. I went over the bridge last fall and it is a fine bridge. It would be a shame to touch it. That is the reason for that reduction.

We are quite confident that the city will meet its local contribution requirements.

Mr. MARSHALL. The funds appropriated this year will complete this project?

Colonel PERSON. Yes, sir.

Mr. MARSHALL. Do you have any reserve?

Colonel PERSON. That, sir, I do not know. We have, of course, a small contingency item. Whether we will need it or not we will not know until the project is finished.

CHEATHAM LOCK AND DAM

Mr. MARSHALL. The next project is the Cheatham lock and dam on the Cumberland River. We will insert in the record pages 77, 78, and 79 of the justifications.

(The information is as follows:)

CHEATHAM LOCK AND DAM, TENNESSEE (CONTINUING)

Location.—On the Cumberland River, 148.7 miles above the mouth, in Cheatham and Dickson Counties, Tenn., about 9 miles northwest of Ashland City, Tenn., and approximately 42 river-miles below Nashville, Tenn.

Authorization.—1946 River and Harbor Act as modified by the act of June 19, 1952.

Benefit-cost ratio.—1.31 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$31,700,000	
Estimated local cash contribution	0	
Estimated project cost	31,700,000	
Appropriations to June 30, 1954	14,606,000	
Appropriations for fiscal year 1955	4,000,000	
Appropriations to date	18,606,000	59
Appropriations requested for fiscal year 1956	6,360,000	79
Balance to complete after fiscal year 1956	6,734,000	

PHYSICAL DATA

Dam (overflow):
Type: Gate-controlled, concrete broad-crested weir with stilling basin.
Height: Maximum 75 feet.
Length: 495 feet (does not include width of lock or powerplant).
Lock:
Type: Concrete gravity.
Chamber size (clear dimensions): 110 by 800 feet.
Reservoir capacity: Run of the river plant, storage not significant.
Power installation:
Initial: 3 units at 12,000 kilowatts; 36,000 kilowatts.
Ultimate: 3 units at 12,000 kilowatts; 36,000 kilowatts.
Presently planned: 3 units at 12,000 kilowatts; 36,000 kilowatts.
Nominal head: 22 feet.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Entire project	47	Entire project, June 1958.
Acquisition of reservoir area	91	Land acquisition, June 1955.
Relocations	45	Relocations, December 1956.
Reservoir clearing	72	Dam closure, July 1954.
Construction of lock	98	Lock, June 1955.
Construction of dam	99	Power on line:
Powerplant cofferdam and excavation	100	1st unit, 12,000 kilowatts, July 15, 1957.
Construction of powerplant substructure	2	2d unit, 12,000 kilowatts, Nov. 15, 1957.
Procurement of turbines and generators	4	3d unit, 12,000 kilowatts, Mar. 15, 1958.
Access road	88	

JUSTIFICATION

The power demand of the TVA system, into which the Cheatham power will be fed, is rapidly expanding due in large measure to the accelerated atomic energy programs in this general region. The Tennessee Valley Authority has emphasized its need for additional power and has requested that all economical hydroelectric power available in the Cumberland River Basin be developed as rapidly as possible. The addition of the Cheatham project to the power system of the Cumberland—which includes the completed Wolf Creek, Center Hill, and Dale Hollow projects—will enhance the dependability of the system's power output. Moreover, the power value of the increased flows from the upstream completed projects would be wasted without the main river power dams.

Fiscal year 1956.—The requested amount of $6,360,000 will be applied to—

Completion of county road relocations	$107,800
Initiation and completion of 3d (final) phase reservoir clearing	190,800
Completion of the powerhouse substructure	930,000
Initiation of construction of the powerhouse superstructure	887,600
Continue fabrication of intake and draft tube gates and bulkheads	670,000
Continue fabrication of turbines and generators	2,410,400
Continue fabrication of accessory electrical and miscellaneous power-plant equipment	621,200
Completion of access road	10,600
Purchase of permanent operating equipment	15,000
Engineering and design	66,600
Supervision and administration	450,000
Total	6,360,000

With the funds requested, the project can be advanced as scheduled, with the first power unit operating for commercial production by July 15, 1957. The project will be completed for navigation purposes and construction of the powerhouse substructure well underway by June 30, 1955. The funds requested are needed to carry on the contract for the construction of the substructure, as scheduled, and to phase the completion of the relocations, clearing, and construction of the powerhouse superstructure in order to produce power as quickly and economically as possible.

Mr. MARSHALL. We will be glad to have your statement on this project.

Colonel PERSON. Yes, sir. Cheatham is a project which is primarily for navigation, since it will replace three old, obsolete, inadequate locks with one modern lock 110 feet by 800 feet which will take a high-type river traffic. It is a fixed dam, nonnavigable, with a gated spillway. The dam is 495 feet long and 75 feet high with 7 gates. The pool extends 67½ miles upstream.

This is to have three 12,000-kilowatt generators, or a total installed capacity of 36,000.

We will have a relatively high base power output here for the reason, as I said before, that we have Wolf Creek, Center Hill, and Dale Hollow upstream to regulate our low flow. We estimate we will produce 160 million kilowatt-hours per year.

The benefit-to-cost ratio is 1.31 to 1.

At the present time we have decreased our cost by $500,000 from our last testimony in 1953. It was $32.2 million then, and now is $31.7 million.

Mr. TABER. You have to have one more appropriation for this?

Colonel PERSON. Yes, sir.

Mr. TABER. How far along are you?

Colonel PERSON. The appropriations we have asked for for fiscal year 1956 will bring it up to 79 percent of the estimated cost that will have been appropriated. We will need another $6.7 million to complete after 1956. We will have an unobligated balance at the

end of this year of $190,000; $150,000 of that is in lands, on which there has been a delay in acquisition. We may have a saving.

The remaining $40,000 of the unobligated balance results from a reduction in this year's cost of supervision and administration.

We will have a relatively large unexpended balance because we got hit by the floods in the Cumberland this year and the cofferdam had to be flooded. We lost about a month and a half of work.

Mr. TABER. Was the Cumberland higher than normal this year?

Colonel PERSON. Yes, sir. In fact, if it had not been for Wolf Creek, Center Hill, and Dale Hollow it would have been one of the great floods of record, but they cut the crest I think 5 or 6 feet at Nashville. Even so Nashville suffered considerable damage.

General ITSCHNER. If I may make 1 slight correction, while they could do it with 1 more appropriation, Mr. Taber, we plan on continuing for 2 years, getting $4.6 million the first year and $2.1 million the second year.

Colonel PERSON. Thank you, General. I just meant we would not finish this year.

Mr. TABER. In other words, you are reducing your request?

General ITSCHNER. That is for the fiscal year, sir. After fiscal year 1956 it will take $6,734,000 to complete, which we will ask for in 2 years instead of 1 year.

Mr. TABER. I do not think I have anything more.

OLD HICKORY LOCK AND DAM

Mr. MARSHALL. The next construction project is the Old Hickory lock and dam, which is also on the Cumberland River. We will insert in the record pages 85, 86, and 87 of the justifications.

(The information is as follows:)

OLD HICKORY LOCK AND DAM, TENN.

Location.—On the Cumberland River, 216.2 miles above the mouth, in Davidson, Sumner, Wilson, Trousdale, and Smith Counties, Tenn., about 3 miles north of Old Hickory, Tenn., and 23 miles upstream from Nashville, Tenn.

Authorization.—1946 River and Harbor Act.

Benefit-cost ratio.—1.13 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$49,900,000	
Estimated local cash contributions	0	
Estimated project cost	49,900,000	
Appropriations to June 30, 1954	25,421,000	
Appropriations for fiscal year 1955	13,750,000	
Appropriations to date	39,171,000	78
Appropriations requested for fiscal year 1956	5,475,000	89
Balance to complete after fiscal year 1956	5,254,000	

PHYSICAL DATA

Dam:
Type: Rolled earth fill.
Length: 2,870 feet.
Spillway:
Type: Gate controlled, concrete ogee weir.
Capacity (maximum pool): 226,000 cubic feet per second.
Lock:
Type: Concrete gravity.
Chamber size (clear dimensions): 84 by 400 feet.
Lift (normal): 60 feet.
Reservoir capacity:

	Acre-feet
Flood control (surcharge) elevation, 450–445 feet	125, 000
Power (pondage allowance) elevation, 445–442 feet	63, 000
Minimum pool below elevation, 442 feet	357, 000
Total	545, 000

Power installation:	*Kilowatts*
Initial: 4 units at 25,000 kilowatts	100, 000
Ultimate: 4 units at 25,000 kilowatts	100, 000
Presently planned: 4 units at 25,000 kilowatts	100, 000

Normal head: 57 feet.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Entire project	63	Entire project, October 1957.
Acquisition of reservoir area	82	Land acquisition, December 1956.
Relocations	30	Relocations, December 1956.
Reservoir clearing (includes demolition of existing locks).	54	Dam closure, July 1954.
		Power on line:
Dam	99	1st unit, 25,000 kilowatts, March 1956.
Lock	97	2d unit, 25,000 kilowatts, July 1956.
Construction of powerplant	15	3d unit, 25,000 kilowatts, November 1956.
Procurement of turbines and generators	85	4th unit, 25,000 kilowatts, March 1957.
Procurement of accessory electrical and miscellaneous powerplant equipment.	63	
Operational roads	72	
Permanent operating equipment	18	

JUSTIFICATION

The power demand of the TVA system, into which Old Hickory power will be fed, is rapidly expanding due to the accelerated atomic energy programs in this general region. Many industries in the area are likewise expanding. The Tennessee Valley Authority has emphasized their need for additional power and has requested that all economical hydroelectric power available in the Cumberland River Basin be developed as rapidly as possible. The demand for power in this area has been estimated by the Tennessee Valley Authority to be in the order of 9,500,000 kilowatts by 1957. Without the Old Hickory project, the assured capacity available to TVA is estimated to be 9,383,000 kilowatts, leaving an estimated deficit of 117,000 kilowatts. Completion of the Old Hickory project will substantially reduce this deficiency.

Fiscal year 1956.—The requested amount of $5,475,000 will be applied to:

Continue relocations	$348, 400
Completion of clearing and continuing demolition of existing locks	359, 100
Completion of permanent sill of lock (including miscellaneous equipment)	63, 600
Continue construction of the powerplant (including procurement of equipment)	3, 953, 700
Continue construction of operational roads	25, 000
Completion of buildings, grounds, and utilities	152, 900
Purchase permanent operating equipment	20, 000
Engineering and design	100, 000
Supervision and administration	452, 300
Total	5, 475, 000

Every effort should be made to complete the Old Hickory project in 1957 as scheduled to help reduce estimated power deficiency in this area. With the funds requested, it is expected to bring the first 25,000 kilowatt units into commercial production in March 1956 as scheduled. In order to raise the pool for this first power production, it will be necessary to essentially complete the land acquisition, relocations, and reservoir clearing and to continue demolition of existing locks as the pool is being raised. The raised pool will overtop the temporary upper lock gates, and, accordingly, it will be necessary to complete the permanent upper gate lock sill which will allow the lock to be placed in permanent operation.

Mr. MARSHALL. We would appreciate your statement on this project, Colonel.

Colonel PERSON. Sir, Old Hickory forms a team with Cheatham. It is the same type of dam for the same purpose. It is a navigation and power project.

The installed capacity will be 100,000 kilowatts as compared with 36,000 at Cheatham. It will be a dam 98 feet high by 3,750 feet long, with a gate-control spillway, and an 84 by 400 foot lock, which we feel will be adequate for that reach of the river. The tows on the Cumberland are not as long as the tows on the Ohio, because of the fact that the river is crooked and they could not get around the bends if they were longer.

Mr. TABER. What kind of a dam is it?

Colonel PERSON. Part earth fill and part concrete, sir. The concrete dam is in the river proper. Then they have an earth-fill dam embankment extending out to high ground.

Mr. MARSHALL. During the last year your estimate of total cost for this project decreased considerably, from $53.2 million to $49.9 million. Do you think you now have a pretty firm estimate?

Colonel PERSON. I think we have a pretty good estimate; yes, sir. The decreases have been due partly to changes in design, where we find we can save a little money; partly in reductions in relocations; partly in lesser expenditures on acquisition of land; and partly in reducing our administrative cost. I hope we will continue that last trend.

General ITSCHNER. It might be interesting, Mr. Chairman, to note that nationwide, including both increases and decreases, in an algebraic form, there is a decrease of $46 million in the entire program this year as compared to last year's estimate for the same projects.

Mr. MARSHALL. I notice that while your costs have been going down your benefit-to-cost ratio went from 1.63 to 1 last year to 1.13 to 1 this year.

Colonel PERSON. Sir, that was largely due to the fact that it was during this period that we changed our method of analyzing the

cost of electrical power. Previously when you compared the cost of hydropower from the Government hydroplant, for benefit-to-cost purposes, you compared it to the alternate cost of production of steam power by a private interest. We did not consider taxes foregone in that determination. We have now changed and now do consider the taxes foregone. In other words, in effect we say we are going to pay taxes on our money in arriving at the benefit-to-cost ratio, sir. It is an increase in costs, which I think is a very sound approach to the problem, which has caused the change.

Mr. KIRWAN. I see this project was authorized in the 1946 River and Harbor Act. In what year did you start constructing it? Up until 1954 you had $25 million of appropriations. In what year did the work actually start?

Colonel PERSON. January 1953, sir.

Mr. KIRWAN. 1953?

Colonel PERSON. Yes, sir. Actually we are using the lock now.

Mr. KIRWAN. You have done a lot of work here.

Colonel PERSON. I went down to the dedication last year at Cheatham.

Mr. KIRWAN. You must have done fast work since 1953. Up until today you have had appropriated $39 million?

Colonel PERSON. Yes, sir.

Mr. KIRWAN. You must have done fast work and good work.

Colonel PERSON. Yes, sir; it has been a good project all the way through.

Mr. TABER. The big part of this job is said to be flood control?

Colonel PERSON. No, sir.

Mr. TABER. You have 125,000 acre-feet for flood control and 63,000 for power. That would mean that there is twice as much flood control as power.

Colonel PERSON. As you will notice, sir, in our benefit-to-cost ratio we did not claim flood-control benefits.

Mr. BRUCE. I might explain, Mr. Taber, that storage from elevation 450 to 445 is for the purpose of replacing valley storage. It is a surcharge storage. It is not for the normal type of flood control you think about.

Colonel PERSON. We claim no credit for flood-control benefits on the project, sir.

General ITSCHNER. In other words, Mr. Taber, that flood-control storage is to compensate for the loss of storage that would occur if the river were not improved.

Mr. TABER. This project would produce probably 20,000 or 25,000 kilowatts?

Mr. BRUCE. It is a 100,000-kilowatt installation.

Colonel PERSON. That is the installed capacity.

Mr. TABER. I am talking about what it will produce.

Colonel PERSON. This is rated at 100,000 dependable capacity because it is firmed up by regulation from the upstream reservoirs. In other words, when you have one reservoir you have to depend on the natural rainfall. When you have several upstream you can depend on a fairly constant flow.

Mr. TABER. You mean that you actually expect to get 100,000 kilowatts of firm production out of this?

Mr. BRUCE. That is the dependable capacity, operated as a peaking plant. Considering the load factor of about 25 percent, it would mean 25,000 kilowatts, peaked to 100,000.

Mr. TABER. I am afraid it will work out like these projects we discussed this morning.

Colonel PERSON. Sir, here is one figure I think would be of interest: The total average annual energy is 420 million kilowatt-hours. As we explained, we will not run it all the time at its 100,000-kilowatt capacity. It will be used for peaking, like the rest.

Mr. TABER. I believe that is all.

OPERATION AND MAINTENANCE

Mr. MARSHALL. The next item is "Operation and maintenance." A total of $11,036,500 has been requested for operation and maintenance for over 30 projects plus all the locks, dams, and open-channel works on the Ohio River. We will insert in the record pages 92 to 96 of the justifications.

(The information is as follows:)

OHIO BASIN

JUSTIFICATION OF ESTIMATE

1. Navigation

(*a*) *Channels and harbors.*—None.

(*b*) *Locks, dams, reservoirs, and canals.*—The estimate of $9,262,000 for fiscal year 1956 provides for the operation and ordinary maintenance of the locks and dams, essential channel work, and the most urgent repair of the structures at nine projects. The rehabilitation work includes such items as lock repairs and overhaul, painting of movable dam parts, valve rehabilitation, and navigable dam parts replacement. The estimate contemplates operation of the projects with the utmost economy consistent with the importance of the waterways to the national economy.

These projects comprise one of the major inland waterway arteries of the United States, transporting more than 15 billion ton-miles of commerce annually. Their continuous operation and proper maintenance is necessary to the general economy and national defense.

The tenative allocations by projects follow:

Tentative allocation, fiscal year 1956

Illinois:	
Ohio River locks and dams	$6,090,000
Ohio River open-channel work	567,000
Kentucky:	
Cumberland River	433,000
Green, Barren, and Nolin Rivers and Bear Creek	159,000
Kentucky River	210,000
Pennsylvania:	
Allegheny River	364,000
Monongahela River	1,130,000
West Virginia:	
Kanawha River	275,000
Tygart River Dam	34,000
Total, locks, dams, reservoirs, and canals	9,262,000
Total, navigation	9,262,000

2. Flood control

(*a*) *Reservoirs.*—The budget estimate of $690,000 provides for the operation and ordinary maintenance of 16 flood-control reservoirs in the Ohio River Basin during fiscal year 1956, and nondeferrable rehabilitation work. The benefits that accrue from the impoundment of damaging flood waters by this extensive reservoir system are substantial. In addition the projects provide considerable collateral benefits. The amount requested in fiscal year 1956 is approximately

$10,000 less than the amount available in fiscal year 1955, and is the minimum necessary for adequate and efficient operation and maintenance of the projects.

Indiana: Cagles Mill Reservoir	$25,000
Kentucky: Dewey Reservoir	33,000
Ohio:	
Berlin Reservoir	37,000
Tom Jenkins Reservoir	18,000
Delaware Reservoir	35,000
Mosquito Creek Reservoir	25,000
Muskingum River Reservoirs	190,000
West Fork of Mill Creek Reservoir	27,000
Pennsylvania:	
Conemaugh Reservoir	39,000
Crooked Creek Reservoir	23,000
East Branch Clarion River Reservoir	26,000
Loyalhanna Reservoir	25,000
Mahoning Creek Reservoir	32,000
Tionesta Reservoir	45,000
Youghiogheny River Reservoir	40,000
West Virginia: Bluestone Reservoir	70,000
Total flood-control reservoirs	690,000

(b) *Other (including channel improvement projects, miscellaneous maintenance items and inspections).*—The budget estimate of $39,500 provides for the minimum requirement of regular maintenance of five local flood protection projects, condition surveys, and inspection of completed works during fiscal year 1956. The estimate includes $1,000 for condition surveys in order to establish the extent of rehabilitation work necessary to place these projects in proper condition for transfer to local interests when legislation becomes available authorizing the termination of Federal responsibility for their maintenance.

	Tentative allocation, fiscal year 1956
Kentucky: Middlesboro	$7,000
Ohio: Massillon	4,000
Pennsylvania:	
Johnstown	7,000
Punxsutawney	3,000
West Virginia: Elkins	4,000
Inspection of completed works	14,500
Other projects	0
Total flood-control other	39,500
Total flood control	729,500

3. Multiple-purpose projects including power

The budget estimate of $1,045,000 for operation and maintenance of the five projects in this category is the minimum amount necessary for operational requirements during fiscal year 1956. It contemplates deferment of other than indispensable ordinary maintenance and rehabilitation work. As construction features on two of the projects are being completed and placed in maintenance status in fiscal year 1956, the amount requested is an increase of $67,000 over the total available for obligation in fiscal year 1955. The completion of power-generating units at these projects will add 25,000 kilowatts of installed capacity during fiscal year 1956, increasing the total generating capacity of all Corps of Engineers multiple-purpose projects in the Ohio River Basin to 484,000 kilowatts.

	Tentative allocation fiscal year 1956
Kentucky: Wolf Creek Reservoir	$340,000
Tennessee:	
Center Hill Reservoir	240,000
Cheatham Dam	100,000
Dale Hollow Reservoir	220,000
Old Hickory Dam	145,000
Total multiple-purpose projects	1,045,000
Grand total, Ohio Basin	11,036,500

PRIOR YEAR FUNDS

Mr. MARSHALL. Will you insert in the record at this point, Colonel, the comparable sums for each of the last 5 years?

Colonel PERSON. Yes, sir.

(The information is as follows:)

Funds obligated for operation and maintenance, general Ohio River Basin, fiscal years 1952 through 1956

Fiscal year 1952, actual	$12,182,700
Fiscal year 1953, actual	13,273,800
Fiscal year 1954, actual	12,225,600
Fiscal year 1955, estimated	12,025,600
Fiscal year 1956, estimated	11,216,100
Budget request, fiscal year 1956	11,036,500

Mr. MARSHALL. This completes this portion of our hearing.

Colonel PERSON. Thank you, sir.

Mr. MARSHALL. We enjoyed having the Corps of Engineers before us. You were a good witness, Colonel.

Colonel PERSON. Thank you, sir.

THURSDAY, MAY 12, 1955.

LOWER MISSISSIPPI BASIN

WITNESSES

BRIG. GEN. E. C. ITSCHNER, ASSISTANT CHIEF OF ENGINEERS FOR CIVIL WORKS
BRIG. GEN. JOHN R. HARDIN, PRESIDENT, MISSISSIPPI RIVER COMMISSION
H. V. DARLING, SPECIAL ASSISTANT FOR THE MISSISSIPPI RIVER COMMISSION
MARSHALL BUSH, MISSISSIPPI RIVER COMMISSION
HARRY COHEN, ASSISTANT CHIEF, PROGRAMS BRANCH, CIVIL WORKS, OFFICE, CHIEF OF ENGINEERS
A. L. ALDRIDGE, PROGRAMS BRANCH, CIVIL WORKS, OFFICE, CHIEF OF ENGINEERS

Mr. MARSHALL. The committee will be in order.

We will take up the last area to be considered by this subcommittee, the lower Mississippi. There is a total of $58,034,600 requested for the projects in this area. We shall insert in the record the summary breakdown of this sum and also the table showing the unobligated balances of funds already appropriated.

(The material referred to follows:)

Lower Mississippi

Appropriation	*Corps of Engineers*
General investigations	$47,000
Advance engineering and design	
Construction	54,108,000
Operation and maintenance	3,879,600
Total	58,034,600

Lower Mississippi Valley division

Project	June 30, 1954		Mar. 31, 1955		June 30, 1955 (estimate)	
	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance	Unobligated balance	Unexpended balance
Navigation:						
Algiers Cutoff, La	$1,655,982	$3,706,239	$561,814	$1,875,642	0	$1,121,200
Plaquemine-Morgan City Route, La	30,862	30,862	121,996	522,079	0	0
Flood control:						
Memphis, Wolf River, and Nonconnah Creek, Tenn	728,812	759,768	[1] 132,868	[1] 170,707	[1] 4,400	[1] 5,300
Mississippi River and tributaries	1,680,694	4,175,466	7,443,121	14,425,314	710,883	3,305,130

[1] Includes $41,000 loaned to project.

Mr. MARSHALL. We have before us, to testify on behalf of the appropriations for the lower Mississippi Basin, General Itschner, Assistant Chief of Engineers for Civil Works, and General Hardin.

Do you have a general statement you wish to make?

General HARDIN. Yes; Mr. Chairman, I do have a general statement.

Mr. MARSHALL. We would be glad to hear from you, General Hardin.

GENERAL STATEMENT

General HARDIN. I am division engineer of the lower Mississippi Valley division, stationed at Vicksburg, Miss. The lower Mississippi Basin extends from the confluence of the Ohio and Mississippi Rivers at Cairo, Ill., to the Gulf of Mexico. On the west it includes the entire St. Francis-L'Anguille River Basin in southeastern Missouri, and on the east it includes the drainage basins of all the eastern tributaries of the Mississippi River below Cairo. The western boundary below Helena, Ark., at the mouth of the St. Francis includes the outlet area of the White River, the Arkansas River below Pine Bluff, the Boeuf-Tensas Basin in Arkansas and Louisiana, the Red River below Alexandria, La., and the Atchafalaya River Basin which serves as an additional outlet to the gulf. The basin is alluvial and flat except for the hills above Wappapello Reservoir on the St. Francis and the eastern escarpment running along the Mississippi River from Cairo to Baton Rouge. The major problem lies in preventing the disastrous floods that have repeatedly occurred in this lower basin of the Mississippi which receives the runoff from 41 percent of the total area of the United States. Flood problems also exist in the tributary basins of the lower Mississippi such as in the St. Francis and Yazoo Basins as a result of both the Mississippi River backwaters and rapid runoff of excess headwaters from these tributaries. Major drainage problems occur on the west Tennessee tributaries, the L'Anguille River, Arkansas, the Big Black and Amite Rivers, La., and the Tensas-Boeuf Basin, Ark. and La.

FLOOD CONTROL

The overall plan of development for flood control provides for the protection of the areas contiguous to the Mississippi River below Cape Girardeau, Mo., and includes protection of the tributary basins

described above by means of levees, reservoirs, floodways, and by channel improvement through the use of revetment, dikes, and dredging. The project has been one of gradual development and is now approximately two-thirds complete. The five reservoirs and the New Madrid, Bonnet Carre, and Morganza floodways are essentially complete. The main-line levees are nearing completion, the remaining deficiencies being in the elevation and cross section of approximately 300 miles of levees out of the 1,600 miles in the main-line system. The channel improvement feature which has the primary objective at this stage of development of providing a more effective flood-carrying capacity, and fixing the pattern of this meandering river, is about one-half finished. Progress in the tributary basins is less advanced on the whole.

NAVIGATION

The Mississippi River and the Gulf Intracoastal Waterway within the territorial limits of the lower Mississippi Basin are major arteries of navigation. The overall plan of development for navigation consists of providing a 12-foot channel at low water from Cairo, Ill., to Baton Rouge, La., with harbors at Baton Rouge, Vicksburg, and Memphis; developing a 35- and 40-foot channel for ocean-going vessels from Baton Rouge to the gulf; construction of the 12-foot navigation route known as the Gulf Intracoastal Waterway between the Rigolets, La., on the east and White Lake, La., on the west, with major branch routes at Algiers below New Orleans and from Morgan City, La., to Plaquemine and Port Allen; and a 12-foot channel in the Atchafalaya River extending from Morgan City, La., to the Mississippi River at Old River.

The Gulf Intracoastal Waterway main system is essentially complete to the adopted standard of a 12-foot depth at low water and 125-foot width. The additional channel and lock into the New Orleans Harbor area at Algiers will be completed in fiscal year 1956. The Port Allen lock opposite Baton Rouge, La., which replaces an obsolete lock in that vicinity is under construction and scheduled for completion in 1961. The Mississippi River 12-foot channel is being developed in a gradual manner, primarily as a byproduct of the channel-improvement program which is a vital flood-control feature.

Various elements of the overall plan have not been started, such as the flood-control programs in the Cache River, L'Anguille River, west Tennessee tributaries, Grand Prairie and Bayou Meto area, and Reelfoot Lake. Navigation improvements which have not been started include Vicksburg Harbor, Baton Rouge Harbor, the 40-foot deep water channel below Baton Rouge (35-foot channel now maintained), and the Atchafalaya River 12-foot navigation channel. The only new start in the 1956 program is the control works at Old River necessary to prevent diversion of the Mississippi into the Atchafalaya River. The navigation project for Bayous LaLoutre, St. Malo, and Yscloskey is eligible for consideration under the provision for small authorized projects.

POWER

There are no projects involving power in the lower Mississippi Basin.

PROPOSED FOR FISCAL YEAR 1956

Work under construction and scheduled for fiscal year 1956 includes Mississippi River levees, channel improvement, Memphis Harbor, St. Francis Basin, lower White Basin, lower Arkansas, Tensas Basin, Yazoo Basin, Atchafalaya Basin, protection for Memphis, Tenn., Lake Pontchartrain, Plaquemine-Morgan City alternate route, and Algiers cutoff.

Water resource developments in the highly productive lower Mississippi Basin are of a comprehensive nature in that they provide for navigation, flood control, major drainage, and are integrated with the developments of State and local undertakings of land utilization or improvement programs. There is a high degree of interrelation of the flood-control and navigation developments between the lower Mississippi River and the rivers which are tributaries thereto. The operation of the reservoirs in the Ohio, Tennessee, upper Mississippi, Missouri, and Arkansas-White-Red Basins has a direct effect on the flood-control works in the lower Mississippi Basin. Within this basin full benefits attributable to the improvements along the Mississippi River proper cannot be realized in the tributary basins until these basins themselves are made flood free. The navigation features of the lower Mississippi River are of vital importance to the Nation, in that they form a trunkline for a great system of waterways connecting the vast North, Great Lakes, and central parts of the United States to the South and gulf coast regions, and provide connections for inland waterway commerce with oceangoing shipping which extends into the basin 248 miles from the Gulf of Mexico.

That is the end of my prepared statement, Mr. Chairman.

POSSIBLE COMPLETION OF WORK

Mr. ANDERSEN. I believe you mentioned, General, that you are about two-thirds completed, generally speaking, with the entire project. However, is it not a fact that we can assume that it will never be completed, from the viewpoint that new problems arise continuously?

General HARDIN. I think that is probably a fair statement, sir, in this regard: The country's growth and the development of agriculture and industry in this central basin, of course, are rapidly changing things. The project was started out in 1928, the major flood-control and navigation project, after the disastrous flood of 1927, on the basis that it was a flexible project, that it was capable of modification and expansion as desired to further accommodate an increasing population and its property.

The history of the project has been one of successive modifications; there being nine, in my recollection, which have extended the scope of the project and its authorized costs.

As the valley continues to develop with the migration of industry to the central portion of the United States, particularly on the Mississippi and the Intracoastal Waterway, I could reasonably expect that there would be continuing demands for additional work on this project.

Mr. ANDERSEN. Off the record.

(Discussion off the record.)

General Investigations

Mr. Marshall. Under the heading of "General investigations" there are requests totaling $47,000 for three studies. The details on pages 1 and 2 will be inserted in the record at this point.

(The information is as follows:)

Lower Mississippi Drainage Area—General Investigations, Fiscal Year 1956

JUSTIFICATION OF ESTIMATE

1. Examinations and Surveys

(*a*) Navigation studies.—The amount of $25,000 is requested for continuation of 1 study in the lower Mississippi drainage area during fiscal year 1956.

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation, fiscal year 1956	Additional to complete after fiscal year 1956
Louisiana: Streams and bayous in southwest Louisiana west of the West Atchafalaya Basin protection levee	$109,000	$42,200	$25,000	$41,800
Total	109,000	42,200	25,000	41,800

(*b*) *Flood-control studies.*—The amount of $22,000 is requested for continuation of 2 studies in the lower Mississippi drainage area during fiscal year 1956.

The tentative allocations by studies follow:

Study	Total estimated Federal cost	Allocations prior to fiscal year 1956	Tentative allocation, fiscal year 1956	Additional to complete after fiscal year 1956
Arkansas: St. Francis River, Ark. and Mo.	$175,000	$97,100	$20,000	$57,900
Louisiana: Streams and bayous in southwest Louisiana west of the West Atchafalaya Basin protection levee	115,000	42,100	2,000	70,900
Total	290,000	139,200	22,000	128,800
Grand total	399,000	181,400	47,000	170,600

Construction

ALGIERS LOCK AND CANAL

Mr. Marshall. I notice there are no funds requested for advance engineering and design, so we will proceed to the first construction project, which is the Algiers lock and canal on the Gulf Intracoastal Waterway.

We will insert in the record at this point pages 5, 6, and 7 of the justifications.

(The information is as follows:)

Algiers Lock and Canal, Gulf Intracoastal Waterway

Location.—Channel extending from the right bank of the Mississippi River at mile 88 above the Head of Passes to the Intracoastal Waterway at mile 6 west of Harvey lock, a distance of 9 miles.

The Algiers lock and canal affords the Intracoastal Waterway an alternate connection with the Mississippi River in the vicinity of Algiers, La., opposite New Orleans.

Authorization.—1945 River and Harbor Act.

Benefit-cost ratio.—Algiers lock and canal 3.14 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$14,900,000	
Estimated local cash contributions	0	
Estimated project cost	14,900,000	
Appropriations to June 30 1954	13,637,000	
Appropriations for fiscal year 1955	0	
Appropriations to date	13,637,000	91
Appropriations requested for fiscal year 1956	1,263,000	100
Balance to complete after fiscal year 1956	0	

PHYSICAL DATA

Channels: Algiers Canal 12 feet deep, 125 feet wide, 9 miles long
Locks: Algiers lock 75 feet wide, 760 feet long, 13 feet deep, 18-foot lift

Status (Jan. 1, 1955)

	Percent	Completion schedule
Relocations:		
State Highways 31, 906, 1460, and 1509; Parish Road	65	December 1955.
N. O. & L. C. RR. Bridge	5	June 1956.
Utilities	17	March 1956.
Algiers lock	100	
Channels and canals	50	June 1956.
Levees	25	Do.
Pumping plants and drainage facilities	100	
Buildings, grounds, and utilities	76	Do.
Entire project	76	Do.

JUSTIFICATION

Completion of this lock and canal will alleviate the heavy congestion and delays at Harvey lock, which lock has not been unwatered for major repairs since it was opened to traffic in 1934. Completion will also permit through traffic moving along the Gulf Intracoastal Waterway to bypass Harvey lock and the principal congested portion of the port of New Orleans. Traffic between points on the Mississippi River south of New Orleans and points on the Gulf Intracoastal Waterway west of New Orleans, will likewise be able to circumvent the port of New Orleans and Harvey lock.

The maximum efficient capacity of Harvey lock is 40 lockages per day, but delays to shipping are encountered when lockages run over 20 per day, due to the congestion of traffic in the harbor. Lockages through Harvey lock during 1953 averaged 43.2 lockages per day. The necessity of completing the Algiers lock and canal at the earliest possible date is illustrated by the following: Harvey lock was shut down due to damage to the west rear high gate by a towboat and barge, which required removing and replacing the damaged gate. During the period that the lock was closed, 106 tows were delayed for approximately 42 hours each.

Commerce through Harvey lock in 1953 totaled 14,239,056 tons, and of this 10,550,886 tons was petroleum and petroleum products. Due to the heavy concentration of oil, chemicals and other essential industries in the region served by the waterway, it is of importance to national defense and to essential domestic commerce. Substantial benefits will result from relief of water traffic congestion at New Orleans; acceleration of shipping schedules; and the ability to close Harvey lock for necessary maintenance and repairs without serious interruption of traffic.

Fiscal year 1956.—To provide for an orderly and economical rate of construction with completion as scheduled, $1,263,000 will be required in fiscal year 1956 and will be applied to—

Completion of N. O. & L. C. RR. bridge relocation	$33,000
Completion of telephone cable (N. O. & L. C. RR. Bridge)	1,000
Completion of channel dredging	730,000
Completion of levees	262,000
Completion of buildings, grounds, and utilities by construction of office dwelling	19,000
Engineering and design	58,000
Supervision and administration	160,000
Total	1,263,000

The completion of Algiers lock and canal, as scheduled, so that the present congestion of New Orleans Harbor for waterway traffic to and from the west, and the resulting serious delays can be eliminated, is of primary importance. With funds available for fiscal year 1955, construction of the project will be 93 percent complete and funds requested for fiscal year 1956 will be used for completing construction of the remaining items of work.

Mr. MARSHALL. We would be glad to receive a brief statement on this project.

General HARDIN. Mr. Chairman, this project is a navigation project and it is to provide for an alternate connection in the harbor area of New Orleans for the Intracoastal Waterway. The existing entrance into the harbor area and into the Mississippi River by way of the Harvey Canal has been greatly overtaxed in recent years and it has been a source of grave concern as to the security of that undertaking.

This project at Algiers, as indicated by the accompanying chart with your justification sheets, is a new canal and lock which will enter the Mississippi River in the vicinity of Algiers, La.

The appropriation which is being asked for under this budget will complete this undertaking and provide a modern lock for this alternate entrance into the Mississippi.

I might add that the old harbor lock has not been able to be repaired since 1934, as I remember it. I believe that is in the record. It is getting very dangerously weak.

CONTINGENCIES

Mr. MARSHALL. The planning report shows that the estimated project cost includes $853,000 for contingencies. Is this not unnecessarily high, when your estimate of funds to complete the entire project in 1956 is $1,263,000?

General HARDIN. Where is that figure? In the planning report?

Mr. MARSHALL. You will find it in the planning report.

General HARDIN. The contingencies, that to my personal knowledge still exist, have to do with a foundation condition which is causing us to do some remedial work on that lock at the present time, in the way of a tilt—a modest tilt, but nonetheless presently observable—between the main walls of the lock and the westerly element of the lock which contains the gates. We are at the present time having to drill in the foundation area and determine what is the cause for this misalinement. It is built on pilings. There is no danger about the security of that structure, but that light alluvial soil upon which the structure had to be founded—and all construction in this delta area is founded—at times gives us some difficulty. We expect that we may have to place some fill along one side of this lock to balance the tendency for a rotation movement that we would not want to get out of hand.

Mr. Chairman, that is the only element I know of that requires a contingency.

Mr. TABER. How much is that apt to cost?

General HARDIN. That contingency, sir?

Mr. TABER. Yes.

General HARDIN. The contingency shown in our planning report as part of the overall cost is $853,000, but I do not think that anything like that figure will be required for the remedial work of which I spoke, probably not more than——

Mr. TABER (interposing). A couple of hundred thousand dollars?

General HARDIN. Yes, a couple of hundred thousand dollars.

Mr. TABER. Then we could very readily reduce the request by $650,000.

General HARDIN. I would like to have an opportunity to investigate that, sir. I think our program here for the itemized work for 1956 is representative of the true costs that you will note on page 161 of your justifications.

Mr. Aldridge points out that the planning report figure which shows $853,000 for a contingency was prepared on the basis of contingent costs which would support not only the 1956, but the 1955 year program which is presently under way. The total construction program shown was approximately $4,950,000, and the contingency item for unforeseen developments was to cover both of those items. I think the costs of them shown here in our justification for the completion of the utilities and the other miscellaneous items that total this $1,263,000 are accurate.

I should be glad to furnish a further breakdown of that statement of that contingency item for the record, if you would like to have it.

Mr. MARSHALL. It would certainly appear, on the basis of what we have heard, that this is somewhat in excess of what is needed, General.

Mr. TABER. Well, General, this contingency estimate was gotten up in January, 1955, according to the first sheet here. This report was gotten up in January 1955.

General HARDIN. Yes, sir.

Mr. TABER. Now, we would not expect anything like that to appear between January 1955 and May 1955, unless you were able to tell us in detail what it was, and the only thing you suggested was this $200,000 item that was involved.

Mr. MARSHALL. If you wish to, I suggest that you supply a brief statement on that for the record, General?

General HARDIN. Yes, sir.

Mr. ANDERSEN. General, did you say that this contingency request applies also to the 1955 construction as well as the 1956 construction?

General HARDIN. Yes, sir; there is a percentage in there, of course, to cover the contingencies in the 1956 budget as well as those uncompleted features in the 1955 budget.

Mr. MARSHALL. I would suggest that you supply a statement on that for the record.

General HARDIN. Yes, sir; I shall be happy to do that, Mr. Chairman.

(The matter referred to is as follows:)

AMOUNT OF CONTINGENCY FUNDS RESERVED FOR ALGIERS

As of April 1, 1955, the amount of contingencies reserved for completion of the Algiers lock and canal had been reduced from the amount of $853,000 shown in the planning report to $554,522. The contingency amount shown in the January 1955 planning report was based on estimates made in July 1954. At that time, work totaling approximately $4,100,000 exclusive of contingencies remained to be accomplished. As of April 1, 1955 $3,138,600 (including fiscal year 1956) remained to be spent which included $554,522 for contingencies. The remaining work consists of completion of road relocations, approaches and bridge at Louisiana Highway No. 31, utility relocations, minor repairs to lock, lock operating machinery, stiff-leg derrick and emergency dam, navigation canal embankments, levee gap closure at Highway No. 996, adjustment of power line, enlargement of Augusta drainage canal, excavation of plug at Highway No. C–1460, construction of detour road, highway tunnel, New Orleans and Lower Coast railroad bridge, lock guide wall, closure of 10 levee gaps and construction of road A.

PLAQUEMINE-MORGAN CITY ROUTE, GULF INTRACOASTAL WATERWAY

Mr. MARSHALL. The next project is the Plaquemine-Morgan City route. Without objection we will insert pages 13, 14, and 15 in the record at this point.

(The matter referred to is as follows:)

PLAQUEMINE-MORGAN CITY ROUTE, GULF INTRACOASTAL WATERWAY (CONTINUING)

Location.—Channel from the Mississippi-Atchafalaya section of the Gulf Intracoastal Waterway, in the vicinity of Morgan City, via the borrow pit of the east Atchafalaya protection levee to and through Bayou Sorrel lock (constructed with M. R. & T. funds) and the present waterway to Indian Village, and thence by way of new land cut to the Mississippi River near Port Allen, opposite the lower limit of the port of Baton Rouge, a distance of 65 miles.

Authorization.—1946 River and Harbor Act.

Benefit-cost ratio.—Plaquemine-Morgan City alternate route 1.24 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$28,947,000	
Estimated local cash contributions	0	
Estimated project cost	28,947,000	
Appropriations to June 30, 1954	201,000	
Appropriations for fiscal year 1955	750,000	
Appropriations to date	951,000	3
Appropriations requested for fiscal year 1956	1,260,000	8
Balance to complete after fiscal year 1956	26,736,000	

PHYSICAL DATA

Channels:

Channel enlargement, Morgan City, mile 0, to Indian Village, mile 46.2 from 9 feet deep by 100 feet wide to 12 feet deep by 125 feet wide, 46.2 miles.

Channel extension, Indian Village, mile 46.2 to Mississippi River near Port Allen, 12 feet deep by 125 feet wide, 18.8 miles.

Locks: Port Allen lock (to Mississippi River) 84 feet wide by 1,200 feet long by 14 feet deep; 47 feet maximum lift.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Relocations:		
State Highway No. 168 and bridge	0	June 1958.
Highway, vicinity Indian Village and Port Allen bridges	0	June 1961.
T. & P. RR. at Port Allen and bridge	0	June 1958.
T. & P. RR. at Morley and bridge	0	December 1957.
Power, telephone, telegraph, and power lines	0	June 1957.
Port Allen lock	0	June 1961.
Channel enlargement and extension	0	June 1960.
Engineering and design	36	June 1958.
Entire project	1	June 1961.

JUSTIFICATION

The growth of petroleum and chemical industries along the Mississippi River is responsible for the traffic on the Plaquemine-Oregon City route being through traffic which is destined for Baton Rouge or points upstream on the Mississippi. Due to the inadequate size of the Plaquemine lock and waterway and especially the obstructive bridges in the heart of Plaquemine and the fact that navigation is precluded through Plaquemine lock when Mississippi River stages reach 38 feet, the large tows now in use on the standard 12 feet by 125 feet channels of the Gulf Intracoastal Waterway utilize the route through New Orleans. The route from Morgan City to Port Allen will save 160 miles on a single trip. Commerce through Plaquemine lock in 1953 was 2,196,267 tons while the east-bound traffic through Harvey lock at New Orleans was 10,621,954 tons, of which 7,478,605 tons went up the Mississippi River.

The greater portion of the traffic which will use the Morgan City-Port Allen route is composed of petroleum products, sulfur, acids, iron and steel products, chemicals and similar heavy bulky industrial items. Hence, substantial corollary benefits to the national economy will result from relief of water traffic congestion at New Orleans; acceleration of shipping schedules; and elimination of any possibility that the rail transportation network in a time of emergency might be overburdened with additional heavy freight as would be the case in event lock facilities at New Orleans should fail and the Plaquemine-Morgan City alternate route be unfinished.

The Greater Baton Rouge Port Commission was created by State legislation in 1952 for the purpose of regulating commerce and traffic within the port area, and will include the parishes of East Baton Rouge, West Baton Rouge, and Iberville in which area will lie the whole of the new channel portion of the alternate route.

Fiscal year 1956.—To provide for an orderly and economical rate of construction with completion in fiscal year 1961, as scheduled, $1,260,000 will be required in fiscal year 1956 and will be applied to:

Initiate construction of T. & P. RR. bridge at Morley, La	$977,000
Continue negotiations for land	1,500
Engineering and design	200,000
Supervision and administration	81,500
Total	1,260,000

Funds requested for fiscal year 1956 will initiate construction for the T. & P. Railroad bridge at Morley and complete negotiations for land acquisition; and plans and specifications for construction of the lock at Port Allen will be initiated. The early completion of this waterway is desirable to permit existing and anticipated traffic to take advantage of the savings in mileage and transportation costs.

Mr. MARSHALL. Please give us a statement on this project.

General HARDIN. The project for the Plaquemine-Morgan City route, Gulf Intracoastal Waterway, is to provide for the construction of a new lock at Port Allen which replaces the old lock at Plaquemine. It is a navigation project and also a project which has flood-control benefits in it due to the channel which extends from Indian Village to the vicinity of Morley.

The growth of the petroleum and chemical industries along the Mississippi River has increased to such a degree in recent years that a modern lock is necessary to handle this traffic coming out of the Atchafalaya Basin, and it is also a feeder to relieve the stress on the Intracoastal Waterway coming up into New Orleans where the traffic pattern is so dense.

This will allow 160 miles of saving in distance for the through tows which are seeking to go up the Mississippi River into the Ohio and other tributaries.

This project has been initiated this year.

The channel between Indian Village and Morley is presently under construction on a continuing contract basis.

The design for the Port Allen lock is well advanced, and we are presently making model tests of the lock chambers with the expectation that we will be able to undertake lock construction in the fiscal year 1957.

The funds that are being asked for this year, in addition to the channel which I mentioned, from Indian Village to Morley, are to begin the construction of utility crossings, the first one being the T. & P. Railroad crossing at Morley.

The appropriation for 1956 will advance the project to approximately 8 percent complete. It will be several years before the undertaking can be brought to completion. It is scheduled for completion approximately in 1961.

ADJUSTMENT IN COST ESTIMATES

Mr. MARSHALL. General Hardin, could you give us some of the details concerning the reason for the estimated cost going up by over $4,500,000, and the change in the benefit-cost ratio from 1.37 to 1 to 1.24 to 1? Can you explain that?

General HARDIN. Yes, sir.

The additional cost which is now estimated to be $28,947,000, has been increased over the 1953 base by these sums:

Approximately $2 million of that total is an amount which will not be decided as to its requirement until we finish the design of the lock, and have made extensive soil borings and foundation studies in an effort to determine whether or not this lock shall be on the basis of a continuous construction of walls, in other words, like a dock floating on the foundation, or whether it will have to have piling under the lock walls. We wanted to inform the committee of the possibility of the lock having to be built with piling, and $2 million is considered to be the possible increased cost for that purpose. It is not firm at this time.

Mr. TABER. What do you mean, if the foundations do not turn out to be as stable as you had expected them to be?

General HARDIN. It is that in part, Mr. Taber. One of the greatest difficulties down in that area is the nonuniformity of the soil formations.

At the time the preliminary studies were made, and before, of course, the extensive and expensive soil borings were made, which only come as part of the construction phase of the project, it was affirmed that the uniformity of the soils was nothing to be concerned about, but after we got to the point of making the borings we found that the Mississippi River, in laying these formations down, had a

very confused pattern in that area, and no matter where we tried to locate this lock part of it would be on fairly firm material, whereas the other part would, obviously, require something in the way of piling support. Well, it caused us to seek about 3 alternate locations after we got into detail design, in trying to find a place where at least we could build this lock, which is 1,200 feet long and more with the adjoining walls, on something that would have uniformity, so that we would not have part of the structure on a stable foundation, and part of it on something which is less than a stable foundation which would only give us trouble with settlement and cracking.

PLANNING ON PROJECT

Mr. MARSHALL. How nearly complete is your planning on this particular project?

General HARDIN. At the present time it is about 35 percent complete. I believe the planning report reported it in January as being about 36 percent, 36 percent in January.

Mr. MARSHALL. Thirty-six?

General HARDIN. Yes. It has advanced considerably since then. Today it is about 40 percent.

Additional increments for this estimated greater cost have to do with the channel itself in the lower basin. We had expected that we could use the existing borrow pit which was the area from which soil was taken to form the levees in the lower basin, and we expected to be able to enlarge that borrow pit or area as the navigation channel.

We have had difficulty in the last year trying to raise those levees, to keep them up to a grade that will continue to provide the flood protection that the valley is expected to be afforded, and we find that if we do not put this navigation channel farther away from the toe of the levee that we are going to invite a degree of instability of those levees which might be cause for a serious flood.

There is another reason for the sum being $4,500,000 more in total than the previous estimate, and that has to do with the cost of relocating the utilities.

This area is developing very rapidly, as I am sure is well known, and since this last estimate pipelines have been constructed across the right-of-way, and there are telephone lines and other things which will have to be handled and, as a consequence, the cost of the relocation of the utilities has gone up.

The last increment in that total has to do with being guided by some recent prices on similar bridge construction work in the lower basin, namely, at Algiers, and we felt that we would have to take notice of those costs and include them in the overall total increase.

There are a number of bridges which will be involved in this route from Morgan City to Port Allen.

COOPERATION OF LOCAL INTERESTS

Mr. MARSHALL. Can you explain the item of $12,500 for "Federal cost of cooperation with the local interests"? I have not noticed such an item in connection with the other projects.

General HARDIN. In this project the local interests are, of course, responsible for furnishing the rights-of-way, and also for furnishing other elements of cooperation, but primarily in furnishing us the real

estate upon which this project shall be built, and through which it will be built. It is necessary for us to give the local interests full information on what alinements will be involved in the undertaking, and to consult with them in the field and to point out to them where the work has to be done so that they can take timely steps to get the real estate, and to assist them from the standpoint of giving us a clear title so that we are not involved in suits as a result of our prosecuting the project, and this sum here is just that cost which we feel will be incurred in the travel of our people, the expense of cooperating with them in getting them to cooperate with us.

It actually is a small sum which, you might say, could be charged to overhead, and then we would have to again distribute it back to this project so as to reflect the full cost of this undertaking, and we thought that it was only fair to show what those real-estate costs would be so far as the Federal Government was concerned.

RELATIONSHIP TO HARVEY AND ALGIERS LOCKS

Mr. MARSHALL. In your planning report on page 11, in paragraph 18, under "Current project necessity," you say:

> Commerce through Plaquemine lock in 1953 was 2,234,668 tons, of which 1,986,182 tons was composed of petroleum and petroleum products. Eastbound traffic through Harvey lock in 1953 was 10,621,954 tons of which 7,478,605 tons went upriver. The greater portion of the traffic which will use the Morgan City-Port Allen route, estimated at 2,593,000 tons annually, is composed of petroleum products—

and so forth.

Now, General, we notice over here in connection with the Algiers lock, that that is practically complete, and the justification for that was to relieve the Harvey lock of some of this traffic. Now, are we not putting in facilities here that will be duplicating one another?

General HARDIN. I do not think so, Mr. Chairman.

That Algiers connection, of course, is to provide an alternate entrance into New Orleans Harbor, and into the Mississippi River, because of the fact that the old Harvey lock is so badly overtaxed with this total tonnage, I believe, that amounted in the Algiers lock planning report to some 14 million tons a year, and having to operate at 40 lockages a day with no opportunity to even take steps for ordinary maintenance.

Now, those projects which we are now on at Port Allen will provide for alternate connection with the Mississippi River considerably higher up on the river to avoid going through the traffic pattern of New Orleans entirely, and save 160 miles in travel for those tows that come from the Atchafalaya Basin primarily, and even some from the western portion of the area over into Texas, in making available a much shorter travel line into the Mississippi River and the Ohio River.

Mr. MARSHALL. Will not this channel relieve the pressure on Harvey lock?

General HARDIN. It will undoubtedly relieve the pressure on Harvey lock to the extent that the modern tows which could not get through Plaquemine lock have been using Harvey, and they will, when Port Allen is ready, be able to bypass the New Orleans Harbor area. It will relieve the traffic, but the traffic is growing every year on the coast to the point to where it is now, just in our reach in the lower Missis-

sippi Valley division, some 24 million tons a year, and it is continuing to go up year by year.

Mr. MARSHALL. We are just starting this Plaquemine-Morgan City route. The total cost is going to be in the amount of approximately $26,700,000 before it is complete.

I am still a bit concerned, General, because we have a certain amount of traffic going upstream through the Harvey lock and Algiers lock. We are just completing that, and it looks to me like we are putting in a duplicating facility, because if the traffic is to go through the waterway that is planned here, it is not going through the Algiers lock.

General HARDIN. There will be some traffic, Mr. Chairman, as I say, that is having to use New Orleans now that will, of course, take advantage of this 160-mile saving in travel when the Port Allen facility is available, but the need for an alternate connection in New Orleans, to supplement the old Harvey lock, is not predicated upon using the same tonnage that will use this Port Allen facility.

In the Atchafalaya Basin, there is a very extensive oil development, and this Atchafalaya Basin is the source of a lot of the petroleum products that are now seeking to use the Palquemine and the Port Allen route.

The east and west movement through Port Allen will be in part through traffic which is seeking to save this 160 miles, but it will also be a large part of the local traffic trying to get out of the Atchafalaya Basin where this oil discovery has been going on now for a matter of 10 years or more.

Those barges come out of the Atchafalaya Basin in rather small units, two barges with a towboat where they have picked up their load at the wells in the basin, and that material comes out into the Mississippi River, and is handled either at the refineries at Baton Rouge, or there it is made up into big river tows to go on up the river.

The justification for this project at Port Allen is not dependent upon the same waterway movements that the Algiers lock is provided to serve, to relieve this pressure on the old Harvey lock in the Harvey area.

Mr. MARSHALL. While some would have to travel the additional distance, the river can handle the traffic through the Harvey lock and the Algiers lock; can it not?

General HARDIN. The river at those locks, of course, has great capacity. There would be no difficulty there except that there is a hazard to barge traffic in too dense a pattern with the oceangoing steamer traffic that is plying the same channel.

Mr. MARSHALL. I notice in the report here that it shows the benefit-cost ratio of the Algiers lock and canal as 3.14 to 1, and the benefit-cost ratio on the Plaquemine-Morgan City alternate route as 1.24 to 1.

It would appear that if this Plaquemine-Morgan City alternate route were constructed that the benefit-cost ratio for the Algiers lock and canal would have been higher than the facts justify.

General HARDIN. No, sir; I do not believe that because if the traffic in the Atchafalaya Basin were forced to use the entrance into the Mississippi River down at New Orleans there would be a severe loss to the shipper in having to move his products south, then east, and then north, and there would be a loss to him over the benefits that

would result from a shorter route such as has been in existence at the old Plaquemine lock, and it is now about 50 years old.

Mr. TABER. How far up the river does the northbound traffic go? If it went to some place that is below Baton Rouge it would not be much of a saving to have it go up to this Morgan City route up to Baton Rouge and then come down the river again. How much of it goes above Baton Rouge?

General ITSCHNER. I will ask General Hardin to answer that.

General HARDIN. The amount is proportionately small, Mr. Taber. I cannot give you a late figure on it, but I know that there is very little of that traffic that comes at present at Plaquemine that turns downstream. Most of it is seeking the Baton Rouge facilities, where it is either refined or it is firmed up into larger tows for the river which towboats take it on upstream, and it may go on up as far as the Ohio Basin. On the other hand it is unpredictable how far it goes, because if it is refined products it starts at Texas, and it may drop off at Natchez, Memphis, or Vicksburg, or any place along the way. The refineries are generally located over in east Texas, or in Baton Rouge.

The raw products coming out of the wells in the Atchafalaya Basin that are in the small barge units, trying to get into the Mississippi will generally be refined right at Baton Rouge, and there will be no occasion for them going back downstream once they get into the Mississippi River.

I think, Mr. Chairman, that I can answer your question, or, at least, I will attempt to, to clarify your mind on why we are building an alternate waterway to get into the Mississippi at Baton Rouge generally and simultaneously with an alternate connection at Algiers.

Mr. TABER. Where is Algiers on the map?

General HARDIN. Right at New Orleans, just across the river from New Orleans.

General ITSCHNER. This is New Orleans [indicating].

General HARDIN. Where General Itschner is pointing you will notice the blue line going down to the southwest [indicating]. That is an alternate canal that ties into the waterway just about 8 miles from the city of New Orleans, and enables us to have 2 approaches to the harbor area of New Orleans, 1 by the old Harvey lock, and 1 by this new facility.

Now, the traffic is ample to support both of those locks, and we must have an opportunity to repair this old lock which has been practically unimproved since 1934.

VOLUME OF TRAFFIC

Mr. TABER. How much traffic do you estimate will go through this canal from Morgan City up to Baton Rouge?

General HARDIN. On the alternate channel through Port Allen?

Mr. TABER. Yes.

General HARDIN. We estimate that it would be 2,593,000 tons annually.

That information is contained in paragraph 18 of the planning report on page 11.

Mr. TABER. How much goes through Morgan City from east and west?

General HARDIN. The tonnage which goes through Harvey lock is the best method of measurement which I can use at the moment,

Mr. Taber, as far as what goes through Morgan City. In our planning report on the Algiers lock we have indicated that there were 14 million tons which went through Harvey lock in 1953.

That is the only way traffic can move east and west from the Mississippi.

Mr. TABER. Such traffic has to go through there?

General HARDIN. Yes, sir.

Mr. TABER. That traffic goes into the Mississippi or across the Mississippi, one or the other; does it not?

General HARDIN. Yes, sir. There is, of course, some heavy local traffic right there at Morgan City which is coming through there as a result of the offshore oil development which is growing by leaps and bounds.

Mr. TABER. That traffic comes into Morgan City?

General HARDIN. Yes, sir.

Mr. TABER. Traffic comes into Morgan City as a result of the offshore operations?

General HARDIN. Yes, sir.

Mr. TABER. The offshore operations have not begun to produce very much as yet; have they?

General HARDIN. It is not the oil, so much, as the heavy tonnage of the drilling equipment and the material for placing these wells in the offshore projects.

Mr. TABER. That is either a downstream or an east and west item?

General HARDIN. It is largely a westerly movement, with the pipe coming from the mills in Ohio and the ship fabrication and barge-building operation right there at Morgan City where there are lots of tonnage in shapes and plates coming in from the north, and even some of it coming in from the steel plant in northeast Texas.

However, there is a heavy local movement in the vicinity of Morgan City, which might cause my figure to be inaccurate insofar as the total tonnage goes in the vicinity of Morgan City.

I think it would be a fair statement, though, that the tonnage at Morgan City which you would be interested in is essentially that which passes through Harvey, which is now our only point of ingress and egress at New Orleans.

Mr. TABER. This would not be an alternate route for New Orleans; this would simply be a route for Baton Rouge?

General HARDIN. No, sir; it is a route——

Mr. TABER. It does not go to New Orleans.

General HARDIN. It is a route which enables this movement to avoid New Orleans, and save 160 miles.

Mr. TABER. That is what I understood; that there would not be anything which would go out of Morgan City to the north on this cutoff, which would be headed for New Orleans; would there?

General HARDIN. No, sir; I do not think there would be.

Mr. TABER. Anything going to New Orleans would go the other way?

General HARDIN. Anything going from New Orleans would stay in the old Intracoastal Waterway, which would seek its outlet either through the Algiers lock that we are building, or the old Harvey lock, which is the only one in existence at the monent, and it is so badly overloaded, as I pointed out.

Mr. TABER. That will not be overloaded after the Algiers lock is built; will it?

General HARDIN. No, sir; it would be adequately stressed with about 20 lockages a day, which is about as much as you can handle without tying up traffic behind you. As it is now, with 40 lockages a day, traffic loses several hours waiting its turn, and jams up in the canal behind Harvey lock and, of course, Algiers lock, the justification for it is largely based on the savings to navigation which will overcome this loss in time to the towboats and tows waiting for their opportunity to get through Harvey lock. The loss in time there is an expense to these tows, and it is a very, very important factor, because they operate on the basis of a thousand dollars a day, as their operating costs, and when they have to tie up and wait their opportunity to lock for a couple of hours, their margin of profit is severely affected.

STATUS OF PLANNING

Mr. TABER. You do not really know whether or not you have enough data so that you are sure where you want to put the lock, and where you expect to build it?

General HARDIN. Yes; we have now gotten the plans finalized as to the lock, and the real estate has been decided upon. The only thing, as far as this Port Allen lock that is still undecided, and that has been considered by the Office of the Chief of Engineers, and the engineers in my office, has to do with whether we shall or shall not have to provide piling under this structure.

Mr. TABER. Provide what?

General HARDIN. Piling to support the lock; drive piling into the sand.

Mr. TABER. I see what you mean.

General HARDIN. Yes, sir.

Mr. TABER. That will add further to the estimate; will it not?

General HARDIN. No, sir; we have anticipated the possibility of having to put that piling under the structure, and that is the reason, in a substantial amount, as to why the cost has increased, which I explained earlier in my testimony, as the increase in cost between 1953 and 1954.

Mr. TABER. In other words, you do not have a foundation which you are sure of for the lock?

General HARDIN. We are not sure of it without having to put piling in. We know that it will be sure if we go to the expense of putting piling under it.

We hope to obviate it by making it a self-contained structure that will float on this material, rather than having to put in support by using piles. It can be done, and we are confident that it can be done, and we do not want to have to spend that several millions of dollars, though, if it is not absolutely required.

Mr. TABER. Would you not have to have more than that to provide a satisfactory lock? Can you have a floating lock like that?

General HARDIN. Well "floating" is a term which I suppose is dangerous to use. It is not floating in water; it really is a self-contained structure, which can be supported by the supporting power of the soils and not have to go into the soils by piling to increase the bearing power of the soil which is there.

The strata of material in this river is built up from a firm sand material about 50 feet below the surface. It has a high supporting

power by having successive layers of silt and clays which the river has laid down, and in some regions those formations which the river has built there are fairly stable, and they are dependable, and uniform, so that you cannot get stresses in the structure, by the nonuniformity of support.

When we run into that nonuniformity of support, though, we have to improve the bearing power of the soil by driving piling into it to gain the additional support of these highly effective sands which you find deeper, and lower in elevation.

Mr. TABER. Have you not gotten to the point where you know what that situation is?

General HARDIN. We have gotten to the point where it is now a fine decision as to whether or not we can suffer the settlement which will occur as against the expense of putting in piling.

Mr. TABER. You really do not know yet whether you have to put in piling or not?

General HARDIN. We do not know at this moment; no, sir.

Mr. TABER. It seems to me that your request is rather premature without your having tested the soil and that sort of thing, to know where you are at the present time.

General HARDIN. Well, Mr. Taber, the project does not require any expenditure on this lock from funds in 1956; that is, fiscal year 1956. You will note that we are not intending to apply any of the 1956 funds on the lock itself.

We expect to apply those funds to the initiation of construction of the railroad bridge at Morley which goes over your new navigation channel and to continue the design. You will notice that we have the engineering and design for 1956 shown as a $200,000 item, indicating that we have not yet progressed to the point where designs are finalized.

Mr. TABER. Can you tell whether you can do the job and do it right before you get through with your soundings, and that sort of thing?

General HARDIN. Well, we know we can do it and do it right. The only difference is that we do not know what it will ultimately cost.

Mr. TABER. You do not know how much it is going to cost ultimately?

General HARDIN. Yes, sir; what I have indicated there as the revised figure or some lesser figure. We have tried to make it the worst by showing you what the cost would be with the piling if we have to use it.

Mr. TABER. How much is this bridge project going to cost?

RELOCATIONS

General HARDIN. The relocations which include the bridge, are $3,509,000. That includes a number of gaslines and telephone and telegraph cables, two railroad bridges, and a highway bridge. I have the details on the individual bridges.

Mr. TABER. Does the railroad pay any part of that?

General HARDIN. No, sir; the railroads do nothing. The law requires the Federal Government to replace the railroad bridges, and one of the highway bridges is being built at State expense, and was so provided for in the budget document.

The other highway bridge, being across a new channel, and man-made channel, is being provided at the cost of the Government. The

maintenance and operation of these bridges, however, is a burden on the local interests.

The T. & P. Railroad bridge, which we expect to start with fiscal year 1956 funds, Mr. Taber, is estimated to cost $1,025,000, and that is the bridge at Morley.

Mr. TABER. On page 9 of the justifications, you only show the cost of a highway bridge.

General HARDIN. I think on page 9, Mr. Taber, that is an estimate of the cost to local interests. On page 169 of the justifications we show how we propose to apply the request for 1956, in that there would be $977,000 utilized in the construction of this first railroad crossing. And to continue negotiations for land, is $1,500 of the total of $12,500 which we indicate was our estimate for the whole undertaking.

The engineering and design for 1956 for continuing the design of the lock and getting out the plans and specifications for the bidding documents and completing the model test and the foundations is included, and if we are going to piles, we have got to make some pile load tests, and all those things, which will require the sum for which we are asking in 1956.

ORIGIN OF TRAFFIC

Mr. TABER. How much of this 2.5 million tons, which you estimate will travel on this cutoff from Morgan City up to Baton Rouge, do you feel will be local pickup in between, and how much of it do you feel will be through traffic?

General HARDIN. Mr. Taber, if I may just make a mental estimate, and I will refer to the project document which was the basis of the congressional authorization for this, to verify my statement, I would estimate that about one-third of the total tonnage which we have to use this channel through Port Allen, about one-third of it would be local pickup and movements in small lots out of the Atchafalaya Basin. The balance would be the through type of traffic which is seeking the shorter route to the north, and saving the 160 miles of travel.

Approximately one-half million tons of petroleum crude originating along this waterway, that is, this one from Morgan City to Port Allen, are destined to the Esso Standard Oil Co. at Baton Rouge, La., and the Shell Oil Co., which is located adjacent thereto.

The remainder, originating in the hinterland beyond Morgan City is destined for the upper Mississippi and Ohio River refineries, "hinterland" meaning to the west, as well as Morgan City, for instance.

So, instead of one-third, it would be about one-fifth, which would be local pickup.

Mr. TABER. What would be the freight rate on that particular run from Morgan City to Port Allen?

General HARDIN. The rail freight rate?

Mr. TABER. No; the barge rate. What would they receive?

You did not study that; did you?

General HARDIN. Yes, sir; we have a study on that, but I do not have it with me here. It would be in the justification for this project which was authorized in about 1946.

Mr. TABER. You did not feel that we would care whether it would pay out or not; is that the idea?

General HARDIN. It will more than pay out. The project is based upon, of course, the savings in transportation costs, and in this case there is not much to do except move it by water, because there are no rail facilities movements.

Mr. TABER. I understand that.

General HARDIN. So, there is a savings in transportation, generally, by water, over one route, as opposed to the other.

Mr. TABER. I see.

If 2.5 million tons is the projected total there, there would be about 2 million tons on which there would be a savings?

General HARDIN. No, sir; there would be a savings on the entire tonnage, because if it originated in the basin, it would have to go a long, circuitous route to get to its destination at Baton Rouge, just as well as the tonnage which is coming from east Texas, trying to get the benefits of that shorter route.

Mr. TABER. Do they not have pipelines through that territory?

General HARDIN. They do; yes, sir, but the pipelines do not carry the crude oil for the refineries; it is generally refined products. The pipelines also carry a lot of gas, but the crude oils are seeking a refinery, and then there is traffic carrying the sulfur for participation in the refining operation.

Those products are not products which use the pipelines. The pipelines generally are east and west movements even in the refined product stage; whereas this traffic, of course, is north and south.

Most of the petroleum refined products running from New Orleans north are not in competition with pipelines, because the pipelines are seeking the east and west movement.

That is a confused pattern.

Some pipelines stop at the Mississippi, and the tows pick up their product along the Mississippi to carry it north, and other pipelines have termini on the Mississippi for local distribution to areas such as Memphis, but it is a small sum, at the moment.

Mr. TABER. The savings are probably based considerably upon the imaginary traffic load?

General HARDIN. No, sir; the savings are based upon the traffic there.

If anything, I think our estimates have been very conservative here, as to what the ultimate is going to be. It is just like this Intracoastal Waterway. It was justified on the basis of something in the neighborhood of 800,000 tons a year, and it is now up in the category of 40 million tons, just in a brief span of a few years.

The growth of this area, and particularly the petroleum reserves, are going to cause this entire traffic pattern to increase, rather than to even stabilize.

So, I think our estimates here for justifying the undertaking at Port Allen are on the extremely conservative side, and as soon as that facility is available, it will increase greatly.

I might add that the local interests in this undertaking at Port Allen are spending large sums in preparation for it. It is the only project that I know of where they have started building terminal facilities before we even get the lock or channel created.

They have just finished a grain terminal there.

Mr. TABER. There is not any channel there now at all?

General HARDIN. No, sir; the old channel is down river about 20 miles at Plaquemine. That is an old lock now, older than 50 years.

Mr. TABER. Is that shown on here?

General HARDIN. Yes, sir. It is totally inadequate in size and in safety. We have had to close that lock at high water stages because it is not safe to operate at high stages of the Mississippi. It was built in the days when towboats and barges were only one-fifth the size of the present equipment which is now used on the Intracoastal Waterway.

Mr. TABER. That is about 10 miles or 15 miles from the river?

General HARDIN. No, sir; the old Plaquemine lock is just adjacent to the river. You will see, if you have your chart, an arrow pointing to it.

Mr. TABER. Yes; I see that. Is the Plaquemine a river or a channel?

General HARDIN. It is a natural channel, or an old bayou which took water out of the Mississippi and it was a natural exit for the Mississippi for many years, until it was closed by a levee and the lock.

Mr. TABER. That is all, Mr. Chairman.

(NOTE.—An additional statement with reference to the subject of the foregoing discussion is as follows:)

PLAQUEMINE-MORGAN CITY ROUTE, GULF INTRACOASTAL WATERWAY (PORT ALLEN LOCK)

The first reach of the Gulf Intracoastal Waterway west of the Mississippi for which traffic figures are available is that from the Mississippi River to the Sabine River (Louisiana-Texas border). The total of all through and internal traffic on this reach of the waterway in 1953 was 21.4 million tons.

The total traffic through the existing Harvey lock (opened in 1934) and Plaquemine-Morgan City Waterway which terminates at the Plaquemine lock (opened in 1909) and the unimproved Atchafalaya-Old River route was 17.4 million tons. In accordance with the traffic study made in 1954 this 17.4 million tons has been redistributed on the basis of completion of the authorized improvements in this area. The 1953 actual distribution and the estimated redistribution with all facilities available, except the 50-year-old Plaquemine lock which is to be abandoned, are shown in the following table.

Lock or waterway	1953 traffic in millions of tons	
	Actual	Redistribution
Port Allen	0	3.2
Plaquemine	2.2	0
Harvey	14.2	−9.5
Algiers	0	
Atchafalaya, Old	1.0	4.7
Total	17.4	17.4

The Port Allen lock and improved Plaquemine-Morgan City Waterway was authorized on the basis of 2.5 million tons. It has been estimated that the average annual tonnage to be expected during the 50-year economic life of this lock and waterway will be 7.0 million tons based on a 3½ percent growth per year for 25 years. It will be noted that the redistribution of 1953 traffic assuming this waterway available exceeds the 2.5 million that was estimated at the time of authorization. It will also be noted that with the redistribution of 1953 traffic, there will still remain 9.5 million tons for the locks at Harvey and Algiers which equals the actual traffic that existed at this point when the Algiers was authorized to supplement the overloaded Harvey lock.

Due to the oilfields being developed within the Atchafalaya Basin and those offshore in the Gulf of Mexico, it is believed that traffic through these authorized

channels and locks will develop rapidly as indicated by the growth of the traffic using Harvey lock—that is, from less than 10 million tons in 1950 to over 14 million tons in 1953. In fact, existing facilities will probably be strained before the Port Allen and improved Atchafalaya-Old River routes can be completed.

MEMPHIS, TENN.

Mr. MARSHALL. The next project for consideration is the one at Memphis, Tenn. We will insert pages 19 and 20 of the justifications into the record at this point.

(The pages referred to follow:)

MEMPHIS, TENN.

Location.—Local protection for Memphis, Shelby County, Tenn., along the Wolf River from its mouth to mile 10, and along Nonconnah Creek from its mouth to mile 4. The Wolf River flows into the Mississippi River at mile 732.6 AHP and the Nonconnah Creek flows into Tennessee Chute (McKellar Lake) at mile 728 AHP.

Authorization.—1937 and 1946 Flood Control Acts, and 1939 WD Civil Appropriations Act.

Benefit-cost ratio.—2.8 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Estimated Federal cost	$11,500,000	
Estimated local cash contributions	0	
Estimated project cost	11,500,000	
Appropriations to June 30, 1954	9,636,000	
Appropriations for fiscal year 1955	0	
Appropriations to date	9,636,000	84
Appropriations requested for fiscal year 1956	700,000	90
Balance to complete after fiscal year 1956	1,164,000	

PHYSICAL DATA

Levees: Average height, 17 feet; length, 10.3 miles.
Floodwalls: Average height, 12 feet; length, 3.1 miles.
Pumping plants:

1 pumping plant with storm water storage reservoirs and connecting conduits (constructed by local interests in 1913). Work on this plant limited to raising discharge tubes to conform to the project grade on 1–C floodwall.
2 pumping plants for sewage and interior drainage, with storm water storage reservoirs and connecting conduits.
2 pumping plants for sewage only, connected to local interests sewers.
1 pumping plant for interior drainage only, with storm water storage reservoirs and connecting conduits.
1 pumping plant for sewage and interior drainage, with storm water storage reservoir.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Levees and floodwalls	66	June 1958.
Pumping stations	100	December 1954.
Bank stabilization	100	
Buildings, grounds, and utilities	30	September 1956.
Entire project	80	June 1958.

JUSTIFICATION

This project will protect 5,400 acres of valuable urban land in Memphis, Tenn., including industrial, warehouse, and railroad facilities, against recurring floods on the Mississippi River. The flood of 1937 caused damages amounting to $300,000, and approximately $1,350,000 was spent by the city of Memphis and the Red Cross to protect against flood loss. A recurrence of the 1937 flood, under present conditions of development in the flood plain, would cause damages estimated at $4,444,000. Annual flood-control benefits for the project are estimated at $1,449,700. Completion of the project at an early date is needed to prevent recurring flood losses. The city of Memphis and Shelby County have expended approximately $1,098,300 for lands, easements, and interior drainage, and have agreed to furnish all required cooperation as work progresses.

Fiscal year 1956.—The requested amount of $700,000 will be applied to—

Continue construction of 1–B floodwall	$182, 800
Initiate construction of 1–A floodwall	405, 900
Engineering and design	50, 000
Supervision and administration	61, 300

The continued construction of 1–B floodwall will complete a useful subsection of section 1 protection. Section 1–A floodwall will join to section 1–B floodwall and will provide additional protection to industries in this locality. During normal recurring floods of short duration, almost all industries will be provided protection.

Mr. MARSHALL. General, we would like a brief statement from you on this project.

General HARDIN. This project at Memphis, Tenn., is a project for the protection of the city. It is in 2 parts, 1 part being generally along the Wolf River to the north, and the other element being along the Nonconnah Creek to the south.

The northern part has its protection in connection with the river-front works, running south along the front of the city.

It is about 84 percent completed at the present time. It has been building for a good many years. The sum we are asking for in 1956 will be utilized to continue a section of the floodwall along the city front, described as section 1–B, which is presently under construction, and carrying that forward on a continuing contract basis, and to initiate construction of section 1–A floodwall, which is just to the south of 1–B on your chart.

That will leave the two elements of the northern line of protection incomplete.

You will note from your chart that there would be a section, 1–E, and section No. 5, which are in the latter priority.

This project has a benefit-to-cost ratio of 2.8 to 1. It involves not only levees, but flood walls, and pumping plants. It is hoped to be able to complete this with the remaining sums in the near future, because of the constant threat to the city of Memphis due to the extreme flood stages which frequently visit it.

Each time there is a flood we have to go to extreme lengths to sandbag and take other emergency measures. There was considerably opposition, however, to prosecuting the undertaking at this time on account of the limitation of funds; also, difficulty of getting prepared for it in view of the fact that the right-of-way has to be made available to us.

LOWER MISSISSIPPI LEVEES

Mr. KIRWAN. What is the height of the levee at Memphis?

General HARDIN. Well, the average height of the levee is about 17 feet.

Mr. KIRWAN. What is the height of the levee at New Orleans?

General HARDIN. At New Orleans it would be about 20 feet, and maybe down right in front of the city where they have a high freeboard, it would be probably about 25 feet high.

Mr. KIRWAN. In what year was the first modern levee constructed at Memphis and on down to New Orleans?

General HARDIN. Well, the first modern levee, I think, might be said to have been started after the Government took the major responsibility for flood control in the Mississippi Valley. That would have been after the act of 1928.

The levees were based upon a new concept to provide protection against a flood larger than had ever occurred, a project flood, which would be based upon a certain concept of storm and magnitude of flow in the Mississippi River, and prior to that time the protection had been based upon previous experience, and the unhappy experience was always the result that a flood came bigger than any they had ever experienced before.

So, we have been improving the protection from Memphis south since the 1928 act.

Mr. KIRWAN. You are reaching toward New Orleans, all the time, from Memphis on down where you think a wall is necessary?

General HARDIN. Yes, sir; but we have not progressed uniformly. The project has been prosecuted on the basis of applying funds available to the most critical places; you will find that we have raised levees in the vicinity of New Orleans at an earlier date than we have done farther upstream because the risks might have been greater at those locations.

SEDIMENTATION

Mr. KIRWAN. Since you have erosion and strip mining throughout the country, you have the dumping of large amounts of silt into the river, and so you will have to continue to build higher levees as time goes on.

General HARDIN. Of course, the sedimentation problem in the lower Mississippi is one of tremendous magnitude. Over a million tons of sediment passes New Orleans every day.

However, that has been going on, not just now, but it has been going on for centuries, because before the white man ever set his foot on this continent, that great delta area was building out into the gulf.

It has been the history of the Mississippi to be building this delta.

Mr. KIRWAN. However, we help it along now, with the strip mining which is going on, and other operations which result in dumping sediment into the river.

Vast areas along the rivers are eroding into the small streams and rivers all over our country.

It was testified here a couple of weeks ago that it cost the State of Pennsylvania $35 million to take the culm out of the Susquehanna, and it costs millions to take the culm out of the Lackawanna.

FLOOD DAMAGE

Mr. BOLAND. I believe the most disastrous flood occured in 1927.

General HARDIN. Yes, sir.

Mr. BOLAND. What was the loss of life in that flood?

General HARDIN. Over 200; there were over 200 who lost their lives.

Mr. BOLAND. Do you have an estimate as to the property damage which was done?

General HARDIN. Yes, sir. At that time it was estimated to be in the neighborhood of $200 million.

Mr. BOLAND. That is all.

MEMPHIS PROJECT

Mr. TABER. You did not have any appropriation for this item last year; did you?

General HARDIN. No, sir; we did not, for the Memphis-Wolf River and Nonconnah Creek projects, sir.

We had funds which were carried over and applied to this contract. We did work up there, but it was done with funds which came out of the previous fiscal year appropriations.

Mr. TABER. Those funds came out of the 1954 appropriation?

General HARDIN. I can give you the amount.

Mr. TABER. Have you actually obligated this money which you had available?

General HARDIN. Yes, sir.

Mr. BUSH. Mr. Taber, as of March 31, this year, we had $132,900 unobligated, and we estimate that on the 30th of June we will have $4,400 unobligated.

Mr. TABER. How much did you have transferred to this project from something else during the year?

General HARDIN. In 1955 there was a sum which was returned to this project of $461,000, and then there was an unobligated carryover from the prior year of $267,100, giving us a total for obligation in 1955 of $728,800.

There being no appropriation for 1955, the project was carried forward on this basis of funds returned, and those funds which were unobligated from the previous year. We had difficulty in getting the rights-of-way, as I recall the situation there.

The local interests had to clear the land, and move some factories, and what not, and it took longer than we anticipated.

Mr. TABER. Do you have the right-of-way which you require?

General HARDIN. Yes, sir.

Mr. TABER. The report indicates that you still have $41,000 which was loaned to the project from other projects.

What is the situation in regard to that, and what is the reason that those loans were made?

Mr. BUSH. The city of Memphis provided the rights-of-way earlier than we anticipated, and we needed it to put on the existing contracts, or the contracts which will be let before the end of the year. As I stated, our estimate for the unobligated balance is only $4,400 out of a total availability for obligation of $769,800.

Mr. TABER. From what project did you get those funds?

General ITSCHNER. That is hard to identify, sir. It came out of the Office, Chief of Engineers, reserve, and we do not know exactly which project it came out of.

It was a surplus to some other project.

Mr. TABER. That is all.

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES

Mr. MARSHALL. The next project is entitled "Flood control, Mississippi River and tributaries." This is a very large project, accounting for $50,885,000 of the 1956 request. This is broken down into several subprojects, which we will take up individually. First, we shall insert in the record the summary appearing on pages 24–26 of the justifications.

(The information is as follows:)

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES—JUSTIFICATION OF ESTIMATE

Tentative program, fiscal year 1956

1. Construction:		
(*a*) Main stem:		
Mississippi River levees	$2,000,000	
Bank-stabilization works	19,000,000	
Mapping	200,000	
Memphis Harbor	600,000	
Old River control	2,250,000	
Subtotal		$24,050,000
(*b*) Off main stem:		
St. Francis Basin	$3,000,000	
Lower White River	250,000	
Lower Arkansas River	500,000	
Boeuf, Tensas, Lafourche, etc	1,800,000	
Red River backwater area	85,000	
Yazoo River Basin	1,300,000	
Atchafalaya River Basin	4,200,000	
Lake Pontchartrain	1,000,000	
Subtotal		12,135,000
Total construction		36,185,000
2. Maintenance:		
(*a*) Main stem	$11,920,000	
(*b*) Off main stem	2,780,000	
Total maintenance		14,700,000
3. Flood-control emergencies, repair and flood-fighting and rescue work		
Grand total		50,885,000

FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES (CONTINUING)

Location and description.—This comprehensive project will provide flood protection for the lower Mississippi Valley from Cape Girardeau, Mo., to the Head of Passes, La., and for improvement of the river from Cairo, Ill., to Baton Rouge, La. It includes the main river, the basins of the St. Francis, White, Arkansas, Tensas, Red, Yazoo, and Atchafalaya Rivers, and the alluvial lands around Lake Pontchartrain. The completed project will provide protection against a superflood

which will amount to a flow of 2,450,000 cubic feet per second at Cairo, Ill., and 3 million cubic feet per second at the latitude of Old River above Baton Rouge, La. This flow will divide at this point, 1,500,000 cubic feet per second going down the Atchafalaya River and the West Atchafalaya and Morganza Floodways. The remaining 1,500,000 cubic feet per second will continue down the Mississippi River to a point above New Orleans where 250,000 cubic feet per second will be diverted through Bonnet Carre spillway to Lake Pontchartrain. The flow past New Orleans to the Gulf of Mexico will then be 1,250,000 cubic feet per second, which is the river's safe capacity.

The control of this large quantity of water will be accomplished by every practical means of flood control, especially (1) reservoirs, (2) levees, (3) cutoffs, (4) revetment, and (5) floodways.

Authorization.—Act of May 15, 1928, as amended.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Total authorized cost	$1,327,679,600	
Appropriations to June 30, 1954	849,771,400	
Appropriations for fiscal year 1955	31,450,000	
Appropriations to date	881,221,400	66.3
Appropriation requested for fiscal year 1956	36,185,000	69.1
Balance to complete after fiscal year 1956	410,273,200	

NOTES

1. The amounts shown as "Total authorized cost" represent the current distribution of the total monetary authorization for the entire project to its subprojects. The entire project is under review, one purpose being to readjust the distribution of monetary authorization between features in keeping with current costs and the remaining work to be done.

2. The amounts shown as "Balance to complete" for the following subprojects is the amount which will exhaust the monetary authorization as currently distributed and completion of these subprojects will require readjustment of existing authority or additional authority.

Bank stabilization works
Mapping
Old River control
St. Francis Basin
Cache River
L'Anguille River
Grand Prairie-Bayou Meto
Atchafalaya River Basin

BREAKDOWN BY PROJECTS

Mr. MARSHALL. We should like to have you prepare for insertion in the record a table similar to the one which appears on page 571 of last year's hearings, General, showing the fiscal status of each part of this project. Would you do that for us?

General HARDIN. Yes, sir; we have that available.

(The information is as follows:)

Flood control, Mississippi River and tributaries, appropriation

Item of work	Distribution under authorization	Appropriation to June 30, 1955	Percent complete to June 30, 1955	1956 program	Estimated percent complete to June 30, 1956	Amount required to complete authorization
(1)	(2)	(3)	(4)	(5)	(6)	(7)
CONSTRUCTION						
Main stem:						
Mississippi River levees	$267,464,100	$207,309,100	77.5	$2,000,000	78.0	$58,155,000
Bank stabilization works	356,935,400	246,560,300	69.0	19,000,000	74.0	91,375,100
Dredging	91,300,000	75,103,800	82.3	0	82.3	16,196,200
Mapping	4,863,000	3,864,200	79.0	200,000	83.0	798,800
Memphis Harbor	21,600,000	10,551,000	49.0	600,000	52.0	10,449,000
Devils Swamp	2,500,000	0	0	0	0	2,500,000
Morganza structure	20,680,000	18,226,800	88.0	0	88.0	2,453,200
Old River control	47,000,000	250,000	.5	2,250,000	5.0	44,500,000
Completed work	18,092,900	18,092,900	100.0	0	100.0	0
Subtotal	830,435,400	579,958,100		24,050,000		226,427,300
Off main stem:						
St. Francis Basin	44,826,000	22,114,800	49.0	3,000,000	56.0	19,711,200
Lower White River	13,110,000	9,253,800	69.0	250,000	71.0	3,811,200
Cache River Basin	10,000,000	0	0	0	0	10,000,000
L'Anguille River	2,000,000	0	0	0	0	2,000,000
West Tennessee tributaries	7,700,000	0	0	0	0	7,700,000
Reelfoot Lake area	748,100	0	0	0	0	748,100
Grand Prairie-Bayou Meto	6,000,000	0	0	0	0	6,000,000
Lower Arkansas River:						
North Bank	11,910,000	4,226,400	35.6	500,000	39.7	7,183,600
South Bank	15,340,000	13,053,700	85.1	0	85.1	2,286,300
Tensas River Basin:						
Boeuf, Tensas, LaFourche	20,781,000	10,302,000	49.0	1,800,000	58.0	8,679,000
Red River backwater area	8,653,000	7,602,400	88.0	85,000	89.0	965,600
Protection Tensas-Cocodrie area	5,347,000	0	0	0	0	5,347,000
Yazoo River Basin:						
Reservoirs	71,667,300	71,025,000	99.0	0	99.0	642,300
Local protection	7,600,500	4,332,200	57.0	141,000	59.0	3,127,300
Auxiliary channels	20,500,000	329,200	1.6	1,159,000	7.2	19,001,800
Main stem	21,127,800	4,619,300	21.8	0	21.8	16,508,500
Major tributaries	19,729,000	3,089,900	15.6	0	15.6	16,639,100
Minor tributaries	6,575,400	99,200	1.5	0	1.5	6,476,200
Backwater area	26,800,000	169,200	0.6	0	0.6	26,630,800
Big Sunflower, Steele Bayou, etc	7,500,000	701,000	9.3	0	9.3	6,799,000
Lower Red River	8,860,000	8,145,900	92.0	0	92.0	714,100
Atchafalaya River Basin:						
Atchafalaya Basin Floodway	93,556,000	79,041,700	84.5	4,200,000	89.0	10,314,300
Morganza Structure (exclusive of structure)	17,799,700	17,799,700	100.0	0	100.0	0
Bayous Rapides, Boeuf, and Cocodrie	4,290,000	3,380,000	78.7	0	78.7	910,000
Wax Lake Outlet and Charenton Canal	10,098,800	10,098,800	100.0	0	100.0	0
Atchafalaya River and Basin	3,375,500	3,375,500	100.0	0	100.0	0
Atchafalaya River navigation	440,000	0	0	0	0	440,000
Lake Pontchartrain	3,150,000	814,400	25.8	1,000,000	57.5	1,335,600
Amite River	50,000	0	0	0	0	50,000
Completed work	2,764,600	2,764,600	100.0	0	100.0	0
Subtotal	472,299,700	276,338,700		12,135,000		183,826,000
Plant account	24,944,500	24,924,600		0		19,900
Total	1,327,679,600	881,221,400		36,185,000		410,273,200

Mr. MARSHALL. The justifications indicate that the entire project is under review to determine a better distribution of the monetary authorizations. Without getting into too much detail on the subprojects that we will discuss later, could you tell us about your progress in this regard?

General HARDIN. With particular reference, Mr. Chairman, to the comprehensive review?

Mr. MARSHALL. Yes, as it may affect the monetary authorizations.

General HARDIN. The background of the Mississippi River and tributaries project is, of course, interrelated with the authorizations which Congress from time to time has granted, both in connection with physical limitations on the work and fiscal limitations.

The development of the valley and the age of the project and the time since the last comprehensive review of this undertaking warranted, in our opinion, the review to determine whether or not the authorization is presently adequate for what remains to be done; whether the physical limitations on the work should be modified in keeping with the changing aspects of the economy of the valley; and also a technical review of the very basis of this project, which is the magnitude of the flood which we are attempting to protect against.

This project has not been reviewed comprehensively since about 1941. 1941 and 1944 were the authorizations which resulted from that comprehensive review.

We are taking these first steps to make a determination of the proper magnitude of the so-called project flood. That is a large undertaking in itself.

All our defenses are based at the moment upon the concept of a flood which can reasonably occur in the latitude of Cairo, Ill., at the confluence of the Ohio and upper Mississippi, which would result in producing a flow of about 2,450,000 cubic feet per second. That is our chief concern. Is that or is that not a proper flood to be using in the concept of this project?

Of course, it must be realized that the weather records of this country are relatively short, particularly in some portions of the drainage area where we are concerned. The upper reaches of the Missouri, the upper Mississippi, Illinois, Ohio, Tennessee, Cumberland, and so on all contribute to this flood. The weather records extending over a limited number of years makes it very important as a determination to try to estimate what the forces of nature may impose upon us. Therefore, we feel that in this span of about 15 years since it has last been reviewed we should take another look at the meteorology and hydrology and determine whether or not the storm patterns and the superimposition of storms, one on the other, in the most unfavorable set of circumstances that can be reasonably expected, are precise, and what the magnitude of the flood is that we should be designing our protection against.

At the present time we have completed the preliminary studies on that. We have used about a year in so doing. It is now in this Office, Chief of Engineers, for a confirmation of what we have considered to be the proper conclusion. When that is reviewed by the Office, Chief of Engineers, and a decision is made we will then use that project flood in the determination of whether or not our levee grades are adequate. That is the first next step.

That leads us into the first element of our project, the Mississippi River levees, which are along the main stem. This project has been designed for providing this tremendous area with a degree of protection that could be provided in a limited time. Twenty-five years may seem to be a long time, but in undertaking a project of this great magnitude, 25 years is essentially a short time. We have had to use, as I mentioned earlier this morning, an approach to providing protection along the main stem of the Mississippi River to do first things first. In general we have built these levees at not a great factor of safety so far as height goes. The prevailing height of the levees is only 1 foot above the flow line of the project flood. We realize that that might be subject to grave danger in time of a very large flood.

Even the wind, on this river, when it gets into flood, is a thing to be given very careful consideration, because the wave action is something like an inland sea. A 1-foot freeboard in places is a very inadequate degree of protection.

So long as the economy of the basin was what it was a few years ago, you might say that a foot of freeboard, with your flood-fighting capabilities, could be considered to be adequate; but as the valley develops, and knowing that a breach in the line any place will subject the territory to the south of it to inundation, I think that this is a time to take a new look at the levees themselves to determine whether or not they have an adequate freeboard in different parts of the valley.

So we have a chain developing. With a determination of the project flood and a redetermination of the flow line of that flood and a reexamination of the levees which have been built up to the present time, to determine whether or not we can report to the Congress that we think they are adequate or whether they need some additional treatment, we find there are other things that are in a constant change or flux in the valley. That is, the river itself is a living thing. It has tremendous power. Each time that there is a flood, or even a major runout, it has done things that did not exist before this flood or big runout occurred. It may damage the banks. It may scour places that had been inactive before. It may create damaged areas that need either immediate attention or something that should be taken care of in a longer term of years.

One of the big improvements in this river, which causes us to take a new look at it, is the work of man himself. We have shortened this river by some 160 miles, by eliminating the tortuous bends in certain regions and improving the flow line by steepening the grade. Of course, when you shorten the river you entice the water to run at higher velocities and get it to the gulf in a shorter period of time. That has an effect on the levees, also, inasmuch as it has the opposite effect of making your channel more capable of carrying floods, and possibly reducing the flow line.

MISSISSIPPI RIVER LEVEES

Mr. MARSHALL. Perhaps this would be an appropriate time to take up the next item which is the request for the levees you were discussing. We will insert in the record pages 27, 28, and 29 of the justifications.

(The information is as follows:)

Mississippi River Levees

Location.—Except where interrupted by tributary streams and hills, the Mississippi River levee system extends continuously from the vicinity of Cape Girardeau, Mo., on the west bank and from Hickman, Ky., on the east bank to the vicinity of the river's mouth. The system includes the levees protecting Cairo, Ill.; the New Madrid Floodway; the Morganza structure; the Bonnet Carre spillway; and approximately 6 miles of floodwalls.

Authorization.—Flood Control Act approved May 15, 1928, as amended.

Benefit-cost ratio.—Not computed for levees separately. Ratio for main stem is 6.5 to 1.

Summarized financial data

	Amount	Accumulated percent of authorized Federal cost
Authorized Federal cost	$267,464,100	
Local cash contributions	(1)	
Authorized project cost	267,464,100	
Appropriation to June 30, 1954	206,456,100	
Appropriation for fiscal year 1955	853,000	
Appropriation to date	207,309,100	77.5
Appropriation requested for fiscal year 1956	2,000,000	78.0
Balance to complete	58,155,000	

[1] None required by law.

PHYSICAL DATA

Levees: Average height 25 feet (approximate); length 1,599 miles.
Floodwalls: Average height, 12 feet (approximate); length, 6.1 miles.

Status (Jan. 1, 1955)

	Status	Completion schedule
Levees	76 percent (1,328 miles), complete	270.8 miles, 1967.
Floodwalls	87 percent (5.3 miles), complete	0.8 mile, 1957.
New Madrid floodway	100 percent completed [1]	
Bonnet Carre spillway	do	
Entire project	77 percent completed	1967.

Exclusive of $1,743,000 authorized in 1954 act for levee and drainage structure.

JUSTIFICATION

Levees protect the entire flood plain against the project flood by confining the flow to the leveed channel except where it enters the natural backwater areas or is diverted into floodways. The Atchafalaya and Morganza Floodways carry one-half the flow of the project flood below the latitude of Old River. The total area protected is approximately 23,621 square miles, or 15,117,000 acres. The tops of levees deficient in grade vary from a few tenths of a foot to as much as 2 feet below the project flood grade line. Other levees, although their tops are at grade, have deficient cross section and must be strengthened to prevent seepage or failure during high stages. Numerous railroads and highways connecting the eastern and western sections of the country lie within the protected areas. In addition to vast agricultural areas, there are many large and vital industries whose products have a bearing on the welfare and economy of this country. Should the levees fail during a major flood, the resulting overflow would disrupt transportation and communication facilities and prove disastrous to the agricultural and industrial areas.

Fiscal year 1956.—The requested amount of $2 million will be applied to strengthening and raising existing deficient levees to the approved grade and cross section at the following locations:

Sessions, Miss., L 645, enlargement (2.5 miles)	$201, 800
Mound City, Ill., RO 5.2 AC, enlargement (1.2 miles)	238, 500
Mellwood, Ark., R 623, berm	209, 000
Bayou Vidal-Elkridge, La., 418 R–E, enlargement (0.9 mile)	84, 600
Bayou Vidal-Elkridge, La., 418 R–D, enlargement (1.4 miles)	240, 300
Bayou Vidal-Elkridge, La., 418 R–C, enlargement (1.6 miles)	220, 200
Vicksburg, Miss., floodwall extension (0.5 mile)	91, 700
Vicksburg, Miss., levee extension (1.0 mile)	102, 300
Gassoway Lake-Old River, La., 496 R, enlargement (1.0 mile)	64, 600
Lands and damages, real estate activities	1, 000
Meraux, La., enlargement (1.6 miles)	43, 000
Verret Street, La., enlargement (0.1 mile)	9, 000
Wavewash protection below New Orleans	154, 300
Engineering and design	182, 000
Supervision and administration	157, 700

With few exceptions, such as the extension of the Tiptonville-Obion levee and the Old River closure levee, there are levees in place at all authorized locations. In constructing the levee system, a plan has been followed of bringing those levees to grade and section which would be most subject to the danger of failure during a large flood. The weaker levees are given highest priority in the strengthening program. Although this plan results in construction of levees at scattered locations, it assures the most protection at the earliest time. The major portion of work remaining to complete the Mississippi River levee system consists of raising and strengthening existing levees to the approved grade and cross section.

The work at Mellwood is necessary to correct bad seepage conditions and provide stability for the levee.

The other items of work listed are for enlargement of 11.8 miles of levee and flood wall in the next priority of construction to grade and section. It is important that this work be completed as rapidly as practicable in order that the large basins on either side will be protected against the project flood. This protection cannot be afforded as long as there is a weak link in the levee lines.

The $1,000 for lands and damages will be used to obtain rights-of-entry in connection with work to be performed on levees or battures where reimbursement is not required.

Wave-wash protection is needed below New Orleans to protect the levee toe and foreshore from erosion by waves created by wind and passing vessels.

Mr. MARSHALL. Will you give us a brief statement on this subproject, please?

General HARDIN. This subproject, Mr. Chairman, provides for the construction of the main line levees along the Mississippi River proper from Cape Girardeau, Mo., to the head of the passes. That is a total length of roughly 1,000 miles.

This system of levees is not continuous, as you can see from the chart. The western side of the valley is interrupted by some tributary basins, being interrupted by the St. Francis. The levee line down to that point is continuous, up in the Cairo vicinity.

Then we have the levee being resumed at Helena, and going down continuously to the White, and terminating in the White River backwater project.

That resumes again up at Pine Bluff, on the Arkansas, and extends continuously down to the latitude of the Old River.

Then it resumes just south of the Old River and is carried continuously on down to near the head of the passes, where the river divides into several patterns of flow.

On the other side of the basin, being nearer the escarpment, the levee is less long in total length. It begins at Hickman and runs for awhile down to the mouth of the Obion River. Then there is no levee from there to Memphis. It picks up again at Memphis and runs down continuously along the whole eastern side of what they call the Mississippi-Yazoo Delta, a very important region to the

Midsouth. Then there is no levee from Vicksburg, since the river hugs the escarpment until you get down to Baton Rouge, where the levee is resumed and is carried again down to well below New Orleans.

The total number of miles of this levee under the subproject to which you refer, Mr. Chairman, is about 1,600. The degree of completion is carried on the basis of how much we have yet to do in proportion to the authorization. We carry that as being approximately 77½ percent complete.

The remaining work to be done on the levees is not building new levees so much as it is the increasing of the height and the cross-sectional area. The only new levee that remains to be built is about 30 miles, which is on the Obion Basin. There is no levee that we will enlarge in that region.

I should like to make this point clear, if I may, Mr. Chairman: When the Federal Government took this project over in 1928 to provide the major part of the support, the local interests had over a long number of years provided for themselves a flood-control project in which they had expended huge sums of money and a tremendous amount of effort. So it is not a start in the sense that we had in 1928. It is the business of improving on what the local interests had done over a period of approximately 200 years, with over $290 million expenditure on their own part. That is the reason why this levee program itself which I refer to is one largely a matter of enlargement and improvement.

APPROPRIATIONS

Mr. MARSHALL. I note in the justifications that you are asking $2 million for the fiscal year 1956, and $853,000 was appropriated for fiscal year 1955. Could you place in the record at this point the comparable amounts for the preceding 3 years?

General HARDIN. Yes, sir.

(The information is as follows:)

Appropriation to Mississippi River levees by fiscal years

Construction:	
1951	$5, 500, 000
1952	4, 000, 000
1953	3, 300, 000
1954	3, 622, 650
1955	853, 000

Mr. MARSHALL. General, in looking at your map I notice there are several places where the levees follow the curve of the river. Particularly there are some below the Baton Rouge area which go a considerable distance. Why is a levee not put across the neck, instead of following the complete bend of the river?

General HARDIN. Because that was where the levee had been built and enlarged, largely at local interests' expense. There was no occasion for giving up more ground to the river in that locality. The flood-control plan did not call for overtaxing the existing system between Baton Rouge and New Orleans because of the very great height of those levees. We adopted other means which I can touch on later to insure that that portion of the valley had adequate flow capacity, rather than routing the whole flood that we might expect through that reach.

Mr. MARSHALL. Do you make an effort to build your levees in the shortest distance between two points?

General HARDIN. Generally so. There are other controlling factors, though. In certain portions of the basin you have to put the levee in a position where the river in its flood will not be unduly restrained or confined. It is not necessarily true that the levee on a straight line would produce that result, on account of the opposite bank or the configuration of the river itself.

TOTAL COST

Mr. KIRWAN. How much is the levee work going to cost? Have you a total for that?

General HARDIN. Until we finish the review we are now embarked on we feel that the authorized Federal cost which is indicated as $267,464,000 is a reasonable figure to carry. I might shade that on the basis of current construction costs and bid prices by a minor amount of say $20 or $25 million. We think there is more in this authorization than we may need if the levees do not have to be modified beyond our present concept. But so much depends upon the outcome of this calculation of the project flood and whether or not the different reaches of the basin are going to have to have any change in the elevation of the crest of the levee.

MISSISSIPPI RIVER DREDGING

Mr. KIRWAN. This is away from this project, but what is the cost of dredging per year, General, to keep the mouth of the Mississippi open?

General HARDIN. We have that figure, sir, if I may have time to look it up.

Mr. KIRWAN. It does not have to be exact.

General HARDIN. We have a dredging problem continuously at the head of the passes and the mouth of the Southwest Pass and the mouth of the South Pass, the major problem being at the mouth of the Southwest Pass. We operate a hopper dredge about 4 months of the year at a cost in the neighborhood of $2 million a year. That hopper dredge will maintain the river under normal conditions, and we send the dredge away and it operates in other parts of the gulf coast, even coming around in other portions of the United States at times. We need it about 4 or 5 months a year.

Mr. KIRWAN. They must do a very good job there. Was it 1 million tons you said passed New Orleans daily?

General HARDIN. Well, sir, we do not depend just upon dredging. In recent years we have constructed a series of dikes and retards in the lower channel so as to confine the flow and make it scour itself as best it will and carry that silt over the gulf shelf into deep water. If it were not for that we would never be able to dredge enough and dredge fast enough.

Mr. KIRWAN. I was just thinking about what you said went by New Orleans daily, and that you must have done a tremendous job somewhere to keep that river open. Whatever you have done, you have done a good job.

General HARDIN. Well, sir, it has been a job that has been prosecuted now for about 80 years. I think in the last 10 years we have been able to maintain it quite adequately for navigation, although it is a constant effort.

Mr. KIRWAN. That is all, Mr. Chairman.

LEVEES

Mr. BOLAND. You ask for $2 million for fiscal year 1956 for levee work. That $2 million will be spent just on the levee itself; is that right?

General HARDIN. No, sir. If you will run down that list you will find that there are other things besides just the levee itself.

For instance, you will notice in the justifications that we have some wave-action protection in this $2 million. At the bottom end of the list you will notice one item for $154,000 for wave wash protection below New Orleans.

Then there is a flood wall at Vicksburg, Miss., which has been under construction, and that has not been completed.

Outside of those two items, the rest of it is earthwork for levees.

AUTHORIZATIONS

Mr. BOLAND. All of this work was authorized in 1928, was it?

General HARDIN. No, sir: it was authorized progressively.

Mr. BOLAND. The figure I am looking at, on page 25 on the summarized financial data, shows a total authorized cost of $1,327,679,600. That is the total amount which has been authorized since 1928?

General HARDIN. Yes, sir.

Mr. BOLAND. That sum will practically complete the flood-control work on the Mississippi and its tributaries?

General HARDIN. As I stated this morning, that sum will approximately complete the amount which is associated with the authorizations that Congress has granted up to date; but, as I said, this project is one which grows with the valley. I think it must necessarily be expected to grow. There will probably be occasion for Congress to authorize additional undertakings, which would have the tendency to further increase this authorized cost.

But on the physical limitations of the project as of today, the scope of the work, that sum will come very close to completing the work which is presently authorized.

I say "come very close" and I should like to explain what I mean. In 1950 we reestimated the cost of the authorized work and came before the Congress and asked for an increased authorization to cover the price increases that were due to the trend of the times and other factors. Congress at that time did not see fit to authorize the total amount; authorizing, I believe, $200 million increase, but leaving out $125 million. So we are behind that much in an authorization to cover the anticipated costs of this project to do the things that Congress has authorized us to do.

Mr. BOLAND. As to the figure you mentioned a moment ago, $267,464,000 for levees, you have indicated that that figure might be reduced by as much as $25 million?

General HARDIN. That is correct, sir. In the last few years contractors have given us very favorable prices on earthwork. In addi-

tion to that the amount of work that remains to be done on these levees is such that we feel that there may be some savings in that figure.

Mr. BOLAND. Thank you very much.

BANK STABILIZATION

Mr. MARSHALL. The next subproject is the bank stabilization works. We will insert in the record pages 30, 31, and 32 of the justifications.

(The information is as follows:)

BANK STABILIZATION WORKS (CONTINUING)

Location.—The project is located in the Mississippi River and along its banks between Cairo, Ill., and the end of the levee system below New Orleans, La., a distance of about 950 river miles, and along the right descending bank of the Ohio River below Cache River in the vicinity of Cairo, Ill.

Authorization.—Flood Control Act approved May 15, 1928, as amended.

Benefit-cost ratio.—Not computed for bank stabilization works separately. Ratio for main stem is 6.5 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	[1] $356,935,400	
Local cash contribution	[2]	
Authorized project cost	[1] 356,935,400	
Appropriation to June 30, 1954	227,785,300	
Appropriation for fiscal year 1955	18,775,000	
Appropriation to date	246,560,300	69
Appropriation requested for fiscal year 1956	19,000,000	74
Balance to complete	[1] 91,375,100	

[1] The amount of $91,375,100 is not sufficient to complete the program. This will be reported on in the comprehensive review report now underway.

[2] None required by law.

PHYSICAL DATA

Revetment, 450 miles; dikes, 13 miles.

Revetment generally consists of an articulated concrete mattress placed on a graded bank of the river by floating plant equipment of special design. The approximate cost of 100 square feet (1 square) of revetment in place in 1954 was $38.61 and the average cost per mile was about $750,000. These figures include the costs of bank grading, mobilization, demobilization, and lay-up of plant, materials, labor, supervision and administration, engineering, and upper bank paving.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Bank stabilization	68 (316 miles completed).	134 miles.
Dikes	0	13 miles indefinite.

JUSTIFICATION

The Mississippi River, with a drainage area of about 1,245,000 square miles, has a wide range of flow, increasing from an approximate minimum of 90,000 cubic feet per second (675,000 gallons per second) to a flood of maximum record of 2,345,000

cubic feet per second (17,587,500 gallons per second) which occurred in 1927 at the latitude of Red River Landing. The project flood is 3 million cubic feet per second (22,500,000 gallons per second). The tremendous energy of this volume of water flowing to the sea is partly used up in attacking the river banks, thus causing the unprotected banks to cave into the river. As this caving progresses, the attack becomes more direct, the bendway moves in toward the levee, and more sand is placed in the river and deposited downstream in the form of a sandbar. This bar gradually builds out into the channel and deflects the river current to the opposite bank, thus repeating the cycle. Revetment is needed to prevent the river from recapturing the length taken from it by the cutoffs which reduced flood heights. It is needed primarily at localities where direct attack against a bank is occurring. Prevention of bank caving will help preserve the regimen of the river and obviate levee setbacks where the levees are threatened. Other revetment is placed in localities where the river alinement is satisfactory and caving should not be allowed to get started, especially at locations where the bank is near a main-line levee protecting a highly developed area where the cost of setting the levee back would be prohibitive. Dikes are used in localities where the greater protection afforded by revetment is not required. The allocation for fiscal year 1956 will be applied first to those localities where there is real and immediate danger to main-line levees. These usually cannot be determined definitely until the spring floods subside. Progress has been made on the four reaches, namely: Cairo-Memphis; Memphis-White River; Arkansas River-Vicksburg; and Vicksburg-Baton Rouge, now being stabilized under a definite plan. Progress will continue on these reaches with funds requested for fiscal year 1956. Failure to continue work on the definite plan in the manner proposed will have an adverse effect on the revetment completed, and thus delay the completion and increase the cost of the bank-stabilization project as well as greatly increase the annual maintenance costs. Delay in revetment will enable the river to continue its effort to recapture its length reduced by the cutoffs.

Fiscal year 1956.—The requested amount of $19 million will be applied to constructing revetment at the following locations:

Toney's Towhead, Tenn. (0.6 mile)	$318,700
Merriwether Bend, Tenn. (1 mile)	637,400
Cedar Point, Tenn. (1.3 miles)	743,600
Island No. 9, Ky. (1 mile)	827,900
Above Morrison TH, Mo. (1.9 miles)	1,160,000
Little Cypress Bend, Mo. (2.8 miles)	2,069,700
Dean Island, Tenn. (1 mile)	827,900
Robinson Crusoe, Tenn. (1.3 miles)	965,900
Below St. Francis River, Ark. (1.9 miles)	1,379,800
Sunflower Cutoff, Ark. (0.5 mile)	343,300
Victoria Bend, Miss. (1.9 miles)	1,240,000
Cypress Bend, Ark. (2.3 miles)	1,493,000
Ben Lomond, Miss. (1.9 miles)	1,240,000
Belle Island, Miss. (1.3 miles)	868,000
Racetrack, Miss. (1.3 miles)	868,000
Reid-Bedford, La. (1.1 miles)	792,300
Iowa Point Landing, La. (0.5 mile)	432,000
Port Allen, La. (1 mile)	715,000
Engineering and design	603,400
Supervision and administration	1,474,100
Total	19,000,000

The 18 items of work listed will provide 24 miles of revetment in the next order of priority. However, should river conditions be much different in fiscal year 1956 than what is now anticipated, some locations may be changed to meet the new conditions.

Mr. MARSHALL. We would be glad to have your statement on this subproject.

General HARDIN. That subproject, Mr. Chairman, as we might call it, is one of very great importance to the success of this undertaking. Bank stabilization on the Mississippi is the key to holding the ground that you gain.

This river, of course, has the desire and tremendous energy to cut banks and meander in its pattern to the gulf. It has been that way

always. If we did not do something about restraining it our work would be futile.

To me at the present time that is the most important feature of this river problem. We attempt to hold the river in a favorable pattern for two reasons. The first reason is to prevent it from destroying the work of man along its banks or near its banks; levees and other control works that have to be built near the riverbanks. But there is another great and important reason for the stabilization of this river, and that is for river improvement, to make it an efficient carrier of water so that in time of flood the water is gotten to the gulf with greater facility, and the same channel will conduct more water than if you had a shallow inefficient carrier.

So we are attempting to hold this river in what might be termed an hydraulically efficient pattern. That increases our flood-carrying capabilities.

Another great reason for this project of stabilization is from the standpoint of navigation. As you probably remember, this undertaking began with Federal Government participation in it over 100 years ago, purely on the basis of navigation. Ever since the beginning it has been one of the prime reasons for improving the Mississippi River. As I pointed out this morning, it is now the trunk of a great interstate internal system of waterways that this country is profiting by to such a great degree. Without stabilizing this river and preventing it from taking unfavorable patterns navigation is extremely hampered. Bars form in the river channel and impede the passage of these tows and cause difficulty in maintaining the flow of navigation.

Our revetments are not only for flood control but to a large degree for navigation, to get the river to hold the pattern we are trying to develop, and to keep from losing the 160 miles of shortening that has been gained. We do this by using an articulated concrete mat, which is a development of the last 25 years. It is a concrete slab affair in small units, joined with noncorrosive wires, and placed on the sloping banks of the river from the flow line out into deep water, and it is a very extensive piece of work in that where the river is deep our revetment at times has to extend from the shoreline out 300 or 400 or 500 feet into the river.

MATS

Mr. MARSHALL. You use concrete mats exclusively?

General HARDIN. Yes, sir; except in the upper bank portion. From the river flow line under water it is all concrete mats.

Mr. MARSHALL. Do you buy these mats or do you make them?

General HARDIN. We make them. We make them by contract and hired labor in this way: We contract for the making of the slabs. Those slabs are joined together into a so-called square, 100 square feet; 4 feet wide and 25 feet long. That is a unit. That is about 3 inches thick. It has a couple of coated wires running through the center of the slab into the adjoining slab, and in that way we get the continuity of the unit.

Then those units are moved from the concrete casting yard by barge to a floating plant, which is a Government-owned plant, to the point where we are building this revetment. That piece of plant has the name of a sinking plant. These individual units, 25 feet by 4 feet in size, are joined together on the surface of a barge which has a sloping deck. It has a movable deck to a degree.

We build the slab at the upper side of the barge and it moves constantly toward the water's edge. We anchor that ashore and then progressively pull the barge away from the shore out to whatever depth the river depth requires. The barge is then moved laterally and another course is laid from the edge of the bank out into deep water.

About 25 percent of that work is done by contract, again. We own 3 sinking plants. One of them is contractor-operated and 2 of them are Government-operated.

The work which we propose to do with the funds we have requested this year will provide about 24 miles of revetment, and again it will be applied to the locations where the urgency is greatest. Our effort is, however, to provide progressively the stabilized bank from the upper reaches of the Mississippi to near its mouth.

COSTS

Mr. MARSHALL. How do your costs per mile for bank stabilization compare now with past years' costs? Do you have any figures on that?

General HARDIN. Yes, sir; we will be glad to insert that in the record for you.

(The information requested is as follows:)

Levee and bank protection mileage and average unit cost—Construction

Fiscal year	Mississippi River levees		Off main river levees		Mississippi River revetments		
	Miles constructed	Average cost per cubic yard	Miles constructed	Average cost per cubic yard	Miles constructed	Gross squares per mile [1]	Average cost per square [2]
		Cents		*Cents*			
1948	35	26.6	51	30.5	10	21,078	47.14
1949	46	34.3	1.39	34.9	14	18,232	50.62
1950	58	31.4	1.28	34.2	22	18,840	41.47
1951	60	31.9	44	36.6	25	21,102	36.62
1952	34	36.5	55	31.6	21	21,736	33.45
1953	33	30.7	68	28.6	34.7	17,603	36.90
1954	41.64	26.09	65.1	18.95	23.08	17,862	38.61
1955 (estimated to Jan. 1, 1955)	20.45	25.83	40.55	28.16	29.40	17,057	[3] 37.43

[1] Gross squares subaqueous mattress per mile varies with river stages at time of construction.
[2] Unit cost is based on total cost including grading, upper bank paving, mattress mobilization, demobilization, layup, and other indirect costs divided by gross squares of subaqueous mattress.
[3] Unit cost based on allotment of $18,775,000 for fiscal year 1955.

General HARDIN. In recent years we have been constantly improving the costs of this work, in spite of the rising construction prices by developing more effective and efficient plants and getting more out of the placing program. Last year's program being somewhat smaller than the previous year, our unit costs did go back up. Our costs went up some due to having to spread the overhead over a lesser amount of work, but it was primarily due to a large increase in the labor rates which had been prescribed by the Department of Labor for this kind of work.

MAPPING

Mr. MARSHALL. The next item is mapping. We will insert pages 33 and 34 of the justifications in the record at this point.

(The matter referred to is as follows:)

MAPPING (CONTINUING)

Location.—The project covers the alluvial valley of the Mississippi River below Cape Girardeau, Mo.

Authorization.—Flood Control Act approved May 15, 1928, as amended.

Benefit-cost ratio.—Not computed for mapping separately. Ratio for main stem is 6.5 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	[1] $4,863,000	
Local cash contribution	(2)	
Authorized project cost	[1] 4,863,000	
Appropriation to June 30, 1954	3,664,200	
Appropriation for fiscal year 1955	200,000	
Appropriation to date	3,864,200	79
Appropriation requested for fiscal year 1956	200,000	83
Balance to complete	[1] 798,800	

[1] The amount of $4,863,000 is not sufficient to complete the program. This will be reported on in the comprehensive review report now underway.

[2] None required by law.

PHYSICAL DATA

Contoured quadrangle maps, 252

The project provides for topographic mapping and publication of 252 contoured quadrangle maps covering the alluvial valley of the Mississippi River. Approximately 63,000 square miles of area are included in the project. The maps, on a scale of approximately 1 inch to the mile, show streams, lakes, works of man, elevations and cultural features. Each quadrangle covers an area of approximately 250 square miles. These maps have also been reduced and consolidated into sets of maps on scales of approximately 4 inches to the mile and 8 inches to the mile.

STATUS (JANUARY 1, 1955)

Mapping: 77 percent; 248 quadrangles will have been published, 55 need to be revised to incorporate changed physical conditions, and 4 remain to be completed.

JUSTIFICATION

When the project was authorized in 1928, the area was only partially covered by maps of a general nature which were entirely inadequate for detailed engineering studies. Maps in sufficient detail were required for planning and estimating the work to be done under the flood-control program. Due to the physical changes which occur in the rivers and land areas of the lower valley, it is necessary to bring the maps up to date periodically.

Fiscal year 1956.—The requested amount of $200,000 will be applied to completion of the remaining quadrangle maps and to revision of obsolete maps and payment for maps now in process of being published.

Mr. MARSHALL. We will be glad to hear from you on this item, General.

General HARDIN. The mapping effort under this program has just about passed over into a maintenance operation.

You will note that the funds that we have asked for this year, 1956, will complete the quadrangles that had been in the original program. That does not necessarily mean, however, that it will not be a continuing undertaking, because some of the maps now are over 25 years old, and will be subject to being revised.

However, our map program which we embarked on in 1928, when there were practically no maps to be had for the solution of technical problems, as well as the planning of work in the field, those maps

being nonexistent, mapping was an extremely important undertaking in connection with the overall effort.

MEMPHIS HARBOR

Mr. MARSHALL. The next item is Memphis Harbor. We will insert pages 35, 36, and 37 of the justifications in the record at this point.

(The matter referred to is as follows:)

MEMPHIS HARBOR (CONTINUING)

Location.— The project is located on Presidents and Vice Presidents Islands in the Mississippi River on the opposite side of Tennessee Chute from Memphis, Tenn.; in Tennessee Chute; and in Ensley Bottoms between Tennessee Chute and the Tennessee-Mississippi State line.

Authorization.— Flood Control Act approved May 15, 1928, as amended.

Benefit-cost ratio.— 1.95 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	$21,600,000	
Local cash contribution	(1)	
Authorized project cost	21,600,000	
Appropriation to June 30, 1954	9,980,000	
Appropriation for fiscal year 1955	571,000	
Appropriation to date	10,551,000	49
Appropriation requested for fiscal year 1956	600,000	52
Blance to complete	10,449,000	

[1] None required by law.

PHYSICAL DATA

The project consists of a closure dam across the head of Tennessee Chute, an industrial fill above flood stage, a navigation channel along the industrial fill and in Tennessee Chute, bank protection works at the head of Presidents Island, extension of the sanitary sewer from Nonconnah Creek to the Mississippi River, and a levee around the area known as Ensley Bottoms.

Channels and canals: 11 miles, 12 by 300 feet.
Embankment:
    Industrial fill: 960 acres, average height 30 feet.
    Levee: 11 miles, average heignt 28 feet.
Bank protection: 10,000 feet.
Pumping plant: 1.
Sewer extension: 5.3 miles.
Fluctuating water surface, low water to project flood stage: 57.4 feet.
Realinement of Nonconnah Creek: 2,000 feet.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Channels and canals	60	1961.
Embankment:		
Industrial fill	67	1961.
Levee	0	1963.
Bank protection	100	Complete.
Pumping plant	0	1964.
Sewer extension	100	Complete.

JUSTIFICATION

The project will provide an area for a river, rail, and truck terminal at the city of Memphis. The Memphis city front already has been utilized to the maximum practicable extent for industrial and terminal facilities but these are inadequate. Memphis is a distribution center for the Midsouth, being served by many highways and railroads, and by the Mississippi River. The additional area needed for terminal facilities and industrial sites will be provided by the industrial fill. The levee around Ensley Bottoms will provide protection for 6,800 acres of potential industrial sites for industries whose manufacturing processes depend upon fresh water. The channels will provide a slack water harbor for river transportation. The area which will benefit has a population of 2,500,000.

The terminal facilities will be provided and operated by the Memphis and Shelby County Port Commission. The cost to local interests is estimated to be $28,654,000. Local interests to date have expended $1,212,367 for rights-of-way utilities, and planning. Contract for a $1,400,000 river-rail terminal was awarded in 1954. In addition, private concerns have expended $1,111,400 on developing the project. The project is being utilized as rapidly as its completion will permit. New terminals have been constructed by Commercial Barge Lines, Inc., Sinclair Refining Co., Shell Oil Co., United Transports, Inc., and others. Local interests have complied fully with local cooperation requirements and agree to continue to do so.

Fiscal year 1955.—The requested amount of $600,000 will be applied to excavation to the channel along the industrial fill. The excavated material will be deposited in the industrial fill area and thereby bring it nearer completion.

Mr. MARSHALL. We will appreciate a statement from you on this item.

General HARDIN. Memphis Harbor is a navigation and a flood-control project which will provide a terminal facility and also the development of land for industrial purposes, which will require water transportation near the city of Memphis at a location called Presidents Island, which was an island in the river that is being raised in part by dredging operations. The channels that are being created from the dredging will be the backbone of the navigation access to this area. It will provide a river, rail and truck terminal to increase the limited capacity that Memphis had on the Mississippi River, and will give further opportunities for the development of navigation on the Mississippi.

LOCAL CONTRIBUTION

Mr. MARSHALL. What local contribution is required on this project?

General HARDIN. The local contribution required was to furnish rights-of-way and to maintain and operate it after completion, and the estimate of the local cooperation in the form of land acquisition, as I recall it, was in the neighborhood of $440,000, but the project document also called upon the local interests, which are largely the city of Memphis and adjacent areas, to do those things which are required to make the project usable.

Mr. MARSHALL. Are the local people meeting their requirements?

General HARDIN. Yes, sir; they are, I think, in a very adequate fashion, and the development of this project from the standpoint of the movement of industrial and terminal facilities has been most encouraging.

As a matter of fact, I was recently informed by the city of Memphis or, rather, by this commission that now administers this project, the Memphis and Shelby County Port Commission, that their investment at the end of June now totals $4,539,000.

They are presently building a public terminal, and they are providing railroad, road, power, sanitary facilities, and paving, and all

of the adjuncts that go into an operating facility. They are providing these as fast as the land is made available to them. We, of course, are not dredging any of that land this fiscal year. We think that we will be able to resume that operation in the fiscal year 1956 so that the pumping and fill can be further advanced.

At the present time, the embankment, so-called, is only about 67 percent complete. About 600 acres have been made available to the port commission for development purposes.

Mr. MARSHALL. Pardon me, did I understand you to say 57 percent complete, General?

General HARDIN. No, sir. About two-thirds, I believe, is the amount which has been turned over. Of the total area of industrial fill that is included in the project, 960 acres, we have brought up to finished grade approximately 600 acres.

OLD RIVER CONTROL

Mr. MARSHALL. The next subproject is "Old River control." We will insert pages 38, 39 and 40 of the justifications in the record at this point.

OLD RIVER CONTROL (NEW)

Location.—The project is located in the lower portion of the Red River backwater area between the Red and Mississippi Rivers and above the Pointe Coupee north levee in Louisiana.

Authorization.—Flood Control Act approved May 15, 1928, as amended.

Benefit-cost ratio.—7.7 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost (exclusive of lock)	$47,000,000	
Local cash contributions	(1)	
Authorized project cost (exclusive of lock)	47,000,000	
Appropriation to June 30, 1954	0	
Appropriation for fiscal year 1955	250,000	
Appropriation to date	250,000	0.5
Appropriation requested for fiscal year 1956	2,250,000	5
Balance to complete	44,500,000	

[1] None required by law.

PHYSICAL DATA

Low sill structure: Reinforced concrete gates; 13 gate bays each having 37 feet clear width between piers; weir crest 10.0 feet mean sea level except 3 bays with weir crest at −5.0 feet mean sea level for passing low flows; total length 577 feet between abutments.

Overbank structure: Reinforced concrete with removal panels; 73 gate bays each having 44 feet clear width between piers; weir crest 52.0 feet mean sea level; total length, 3,356 feet between abutments.

Maximum W. S. elevation: 67.0 feet mean sea level.

Maximum discharge capacity: Approximately 700,000 cubic feet per second for both structures.

Inflow channel: 0.5 miles long; bottom width 1,000 feet at −5.0 mean sea level.

Outflow channel: 7.0 miles long; bottom width 900 feet at −9.0 mean sea level (average).

Levees: Approximately 12 miles of enlargement and new levees.

Bank stabilization: Approximately 5 miles when needed.

Lands and damages: 9,800 acres for structures and channels, 11,700 acres for spoil disposal (easement).

STATUS (JAN. 1, 1955)

Engineering and design in progress: Construction has not started.
Completion schedule: 1962 (exclusive of lock).

JUSTIFICATION

The project will prevent the Mississippi River from changing its course to that of the Old and Atchafalaya Rivers. Should this occur, the cities of Baton Rouge and New Orleans and many lesser size communities would be without sufficient quantities of fresh water to supply their domestic needs during low-water periods. The vast industrial complex located from above Baton Rouge to near the river's mouth would be without fresh water which is vital to its operation. The Mississippi River as far up as Baton Rouge would become brackish. The plan for controlling floods below Old River would have to be redesigned and reconstructed. Cities, towns, railroads, highways, waterways, industry, agriculture, and utilities in the Atchafalaya Basin would be subject to partial or complete destruction or serious disruption. The investment of the United States in flood control and navigation works would be threatened and a large amount of it lost. The effect would be felt probably as far upstream as Vicksburg on the Mississippi River and Boyce on the Red River as a result of swifter currents and increased meandering. The cost of these losses, not including the dislocation and disruption of industry and agriculture, is estimated conservatively to be $475 million plus an additional annual maintenance cost of $6,700,000. The estimated benefits are $14,600,000 annually.

Fiscal year 1956.—The requested amount of $2,250,000 will be applied to:

Lands and damages	$200,000
Low-sill structure	1,109,000
Engineering and design	765,000
Supervision and administration	176,000
Total	2,250,000

Mr. MARSHALL. We will appreciate a statement from you on this project, General.

General HARDIN. This undertaking has been brought about by the natural forces at work in the lower Mississippi Valley. These forces are not new. They are as old as the creation of the delta itself.

The Mississippi in past ages has meandered over different reaches of that lower delta area, built the delta in the gulf, and changed its course as the advantage occurred to the river, the river always, of course, seeking the shortest course to gulf level that is available to it.

The river has been for many years showing a tendency to seize upon the opportunity to divert its major flood by way of Old River at that location over into the Atchafalaya Basin.

The Red River comes down from the west and north to form at the junction of the Old and Red Rivers, the river which we now call the Atchafalaya.

The Mississippi River, of course, is flowing in a pattern which is quite satisfactory to us from the standpoint of flood control and navigation.

It is a balanced stream, so-called. We thought that it would be extremely hazardous to the future of the valley to let the river change its course and seek another outlet to the gulf on account of the great dependence of the whole economy upon fresh water in the region from Baton Rouge down to the gulf, and we have been watching this tendency now since 1879, when the Mississippi River Commission was authorized.

At that time the tendency was apparent, but through the years we have reported to the Congress on numerous occasions, at least 3 or 4, that it did not appear timely or desirable to do anything to

decrease the enlarging tendencies that were obvious in the Atchafalaya Basin.

However, we had three large floods, one in 1927, another in 1945, and the last one was in 1950, and watching the enlargement that was taking place in that basin, it convinced us that the situation had gone as far as it should be allowed to go without putting some controls on it, that if we did not do something the river would soon get out of control, and it would be beyond not only economic possibilities, but, possibly, beyond human ability to restrain the Mississippi from flowing in this shorter course to the gulf. We therefore finished the study which had been authorized to be undertaken in 1951, and last year I reported, as president of the Mississippi River Commission, to the Chief of Engineers who, in turn, reported to the Congress that it was necessary that something be done to prevent the uncontrolled diversion of the Mississippi.

It was in last year's Congress that the undertaking was authorized in part, from a monetary standpoint, and we are presently engaged in preparing the initial plans and specifications for a structure called a low-sill structure that will be located north of the location of Old River, and which will permit us to divert water under controlled conditions from the Mississippi over into the Atchafalaya rather than having the uncontrolled situation as it now exists with the possibility that the next big series of floods that we get may scour that Old River out to the degree that further controlling it would be impractical.

Mr. MARSHALL. You are not using any of the $250,000 which is available this year for any actual construction?

General HARDIN. No, sir. We use that for planning purposes and for engineering work, and we are just about to the point where, if these funds are made available to us, we will be in a position to put plans and specifications into the hands of contractors in July and get bids on the first increment of work.

Mr. MARSHALL. I notice that this particular project has the rather high benefit-cost ratio of 7.7 to 1. That is based upon what would happen if the river changes its course, is it, General?

General HARDIN. That is correct, sir, and I might say that it is based only on a very limited number of considerations. We could go far beyond what we did in preparing this report to show what the damages would be, but that is only based upon the things that are certainties.

Mr. KIRWAN. You say that you would be able to control the river, to divert some of the water in time of flood, is that it?

General HARDIN. Mr. Kirwan, it involves several things beside this first structure.

We will build a low-sill structure which will enable us to divert waters from the Mississippi when the Mississippi is within its banks, when it is not in flood.

Then, as the next step, we will have to build a structure which will be up at bank level to protect the capabilities of diverting floodwaters when the river gets out of its banks. It will be similar to one that I think you have seen at Morganza and down near New Orleans at Bonnet Carre.

Then the next step will be to close off the existing channel in Old River by pumping in an hydraulic fill dam across it, and the next step will be, or simultaneously with that operation to put in a naviga-

tion lock there where the pointer is [indicating] in the vicinity of that closure so that navigation will not be prevented from using the Atchafalaya.

Mr. KIRWAN. As a result of what you are going to do you will have useful control of the river at times of low flow as well as high flow, so it will be valuable if they are short of water, or if there is a flood.

General HARDIN. Yes, sir; that is correct, and we feel that we will be able to maintain the present status of the river, which is favorable.

If we let the Old River divert more of its flow by way of the Atchafalaya, the lower Mississippi will begin to silt up, and that will also create tremendous salt-water intrusion problems in the lower valley, because, of course, there is always salt water in the river up to Baton Rouge. It is just a question of keeping enough fresh water flowing in the river on top of the water to keep the salt water depressed.

Mr. KIRWAN. It will be one of the best controls you will have of the river either in low water or high water, and as far as salt water is concerned you will be able to handle it also?

General HARDIN. Yes.

LOCK

Mr. MARSHALL. Your justifications show cost estimates without any lock. How much will the lock cost?

General HARDIN. We have not yet made a full report on it, because we do not know what the traffic requirements on the river are, and we were very hopeful that we were going to be able to see traffic established on the Atchafalaya River by a project which permits the opening of the lower Atchafalaya to barge traffic, before we had to report to the Congress on this lock. At present I would say that a lock will probably cost in the neighborhood of $36 million or $37 million. It will be a 1,200-foot lock, undoubtedly, and probably will be 110 feet wide in keeping with the present standards that are used now on the whole interior system for the Ohio and the Mississippi.

ST. FRANCIS BASIN

Mr. MARSHALL. The next item is St. Francis Basin, and we will place pages 41 through 44 of the justifications in the record at this point.

(The matter referred to is as follows:)

ST. FRANCIS BASIN (CONTINUING)

Location.—The project is located in the St. Francis Basin in southeastern Missouri and northeastern Arkansas, and extends from the hills southwest of Cape Girardeau, Mo., near Wappapello, Mo., to the confluence of the St. Francis and Mississippi Rivers about 10 miles above Helena, Ark.

Authorization.—Flood Control Act of May 15, 1928, as amended.

Benefit-cost ratio.—2 20 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	[1] $44,826,000	
Local cash contributions	[2]	
Authorized project cost	44,826,000	
Appropriation to June 30, 1954	19,378,800	
Appropriation for fiscal year 1955	2,736,000	
Appropriation to date	22,114,800	49
Appropriation requested, fiscal year 1956	3,000,000	56
Balance to complete	19,711,200	

[1] Monetary authorization provided for partial accomplishment. The entire project is authorized.
[2] None required by law.

PHYSICAL DATA (AUTHORIZED PORTION ONLY)

Levees: Length, 470 miles
Relocations:
Missouri Pacific Railroad and bridge near Marianna, Ark.
Highway No. 79, road and bridge near Marianna, Ark.
Frisco Railroad Bridge near Madison, Ark.
U. S. Highway No. 70, State Highways Nos. 50 and 42
Chicago, Rock Island & Pacific Railroad
Miscellaneous road, railroad, and utility relocations
Channels:
Section 1, new channel, Madison to Marianna, 14 miles.
Section 2, new channel in vicinity of Madison, Ark., 10 miles.
Section 3, Whittenburg Cutoff, 5 miles.
Section 4, mouth St. Francis Bay Cutoff, 5 miles.
Section 5, St. Francis Bay Cutoffs, 14 miles.
Dam and reservoir: Wappapello Dam and Reservoir, flood control only.
Pumping plant:
1 pumping plant and drainage structure.
Marked Tree siphon drainage schedule.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Lands and damages	56	After 1961.
Relocations:		
Missouri Pacific R. R	0	1957.
Highway No. 79, road and bridge near Marianna	0	1956.
Frisco railroad bridge near Madison	0	1957.
U. S. Highway No. 70, State Highways 50 and 42	0	1960.
Chicago, Rock Island & Pacific R. R	0	1961.
Miscellaneous relocations	33	1961.
Channels:		
Madison to Marianna:		
Section 1	44	1957.
Section 2	0	1958.
Section 3	0	1959.
Section 4	0	1960.
Section 5	0	After 1961.
Channel work above Oak Donnick	0	Do.
Levees	42	1961.
Dam and reservoir	100	
Pumping plant	0	1962.
Marked Tree siphon	100	
Entire project	41	1962.

JUSTIFICATION

The project is a single-purpose flood-control project and is a unit in the comprehensive plan for flood control, Mississippi River and tributaries. Protection against headwater floods of the St. Francis and Little Rivers will be afforded to an area of approximately 1,235,000 acres of agricultural lands including numerous small towns, several major railroads, and highways and utilities, located in Mis-

souri and Arkansas. The construction of adequate outlets for the many drainage improvements undertaken by local interests will provide relief from overflow for approximately 196,700 acres in the Little River Basin, 20,000 acres in the Elk Chute Basin, and 30,000 acres in the Big Slough Area. In addition, relief from flooding by backwater of the Mississippi River will be afforded to approximately 600,000 acres in the lower St. Francis Basin below the latitude of St. Francis Lake by the construction of the Madison to Marianna Cutoff and related work including the pumping plant. Flooding has occurred every year with few exceptions, and the flood of record which occurred in 1937 caused numerous breaks in the local substandard levees with resultant damages of over $2 million. It is estimated that a recurrence of the 1937 flood, under present conditions of development in the flood plain, would cause damages of over $4,300,000. The average annual flood control benefits for the project are estimated at $9,297,000. Continuing construction of this project is needed to realize the benefit therefrom and prevent recurring flood losses. Local interests have indicated that they will comply with local cooperation requirements as the project progresses.

Fiscal year 1956.—The requested amount of $3 million will be applied as follows:

Lands and damages	$306,000
Continue relocation of U. S. Highway 79 near Marianna, Ark	530,500
Continue relocation of Missouri Pacific Railroad near Marianna, Ark	811,200
Relocation Rock Island Railroad bridge near Madison, Ark	93,300
Continue construction of Madison-Marianna Channel	542,800
Channel clearing, L'Anguille River	55,000
Construction of levee item at Sandy, Ark	189,000
Shaping spoil bank, Madison to Marianna	91,700
Engineering and design	150,000
Supervision and administration	230,500
Total	3,000,000

The construction of the Madison to Marianna Channel will reduce flood stages in the lower St. Francis Basin below Oak Donnick. Relocations of United States Highway No. 79 and bridge and of the Missouri Pacific Railroad and bridge will permit the completion of the main channel work from Madison, Ark., to L'Anguille Lake, thereby diverting the flow of the St. Francis River through the improved channel. The clearing of L'Anguille Lake will complete the channel work through this reach. The shaping of the spoil bank deposited from the channel excavation from Madison to Marianna will provide a continuous levee for the protection of the area from Madison, Ark., to Highway No. 79. Relocation of the Rock Island Railroad bridge near Madison, Ark., will permit the construction of a new channel through this area, which is the next item of work to be undertaken after the Madison-Marianna channel work has been completed. Acquisition of rights-of-way by local interests and the payment therefor will be necessary to permit construction without delay of levees and channels on the new work now in progress and that proposed during fiscal year 1956. The construction of the 4 miles of new levee at Sandy, Ark., will complete the protection on the west bank of the St. Francis River from Leonard, Ark. (mile 208) to near the Poinsett County line (mile 130).

Mr. MARSHALL. We will be glad to hear your statement on this, General.

General HARDIN. This project is devised to provide flood protection against both headwater flooding from the St. Francis, and backwater flooding from the Mississippi. This is an undertaking which, again, has long been initiated by local interests, and the Federal participation in it is one of improvement rather than of initiation. It involves the improvement of channel capacity in the lower reaches of the St. Francis to prevent flooding from the inability of flood waters to escape the flat slopes that eixst in that basin from backing up into the upper portion of the basin and damaging the agricultural lands. There is a tremendous rice industry in that area, and if they do not have the right drainage and cycle of water and the ability to grow crops their economy is badly damaged, so it is a case of getting rid of the water as well as improving the drainage in certain areas, par-

ticularly in the upper portion, so that the water does not stand on this flat ground.

The only portion which Congress has authorized us to undertake is that part dealing with the lower basin, and improving the channel capacity from about the location there of Marked Tree in the southerly portion.

I should go back and point out to you that the upper reaches of the St. Francis were partially improved under a previous undertaking at the time that the Wappapello Reservoir was built to store waters coming out of the hills in southern Missouri to prevent the inundation of those lands in the upper portion of the basin.

It also includes certain levee work along the main stem of the St. Francis, south of Wappapello Reservoir.

The whole undertaking now is one comprehensive whole, and it provides protection to an area of about 1,250,000 acres and it includes areas where there are a number of towns, railroads, and major highways and utilities both in Arkansas and Missouri.

It is our desire to continue with the present undertakings in the lower basin by creating an improved lower channel where nature has left us with only a very tortuous and inadequate outlet into the Mississippi, and this also involves the construction of certain railroad and highway bridges across this channel.

Our funds for 1956, as requested, would be divided between the relocation of these utilities and the channel excavation itself.

The project has great importance to a large region lying back of the Mississippi levees, but is affected to a very large degree by the flood waters of the Mississippi, particularly in this tendency to be inundated by backwaters. Until the channel we are working can be improved the backwater feature cannot be initiated.

FLOOD-CONTROL BENEFITS

Mr. MARSHALL. On what do you base your estimate of annual flood-control benefits of $9,297,000? I notice that the recurrence of the record flood would cause only $4,300,000 damage in this immediate flood plain.

General HARDIN. Yes, sir. As I pointed out, the project has been only partially authorized by the Congress, and the benefit figure which we have referred to in the neighborhood of $9 million, I believe is predicated upon the whole undertaking. We have been directed to review that part of the project which is largely up in the Little River area, and the benefits, however, that are included in that $9 million figure can be divided generally in this fashion, about $5 million is in flood damages prevented. That would be in the lower portion of the basin we are now working on.

Mr. MARSHALL. Is your benefit-cost ratio of 2.2 to 1 based on the $9 million figure or on the $4 million figure?

General HARDIN. That is based on the entire undertaking which, at the time it was authorized, was $88 million.

Mr. MARSHALL. Are the local interests having any trouble acquiring the necessary rights-of-way for this project?

General HARDIN. No, sir; they are not.

LOWER WHITE RIVER

Mr. MARSHALL. The next is the lower White River project. We will place pages 45, 46, and 47 of the justifications in the record at this point.

(The matter referred to is as follows:)

General.—The lower White River project consists of 2 minor projects at DeValls Bluff and Des Arc which have been completed; the project extending from Augusta to Clarendon which is substantially complete and for which completion funds will not be required for several years; and the White River backwater levee. The total estimated cost of all these features is $13,110,000 of which $9,048,800 has been appropriated through fiscal year 1955. The fiscal year 1956 request for funds will apply only to the White River backwater levee.

WHITE RIVER BACKWATER LEVEE

Location.—The project is located in Phillips, Monroe, and DeSha Counties, Ark., between Helena and the mouth of White River. The area is protected by a levee which begins at the Mississippi River levee near Oldtown, Ark., extends westward to White River, and then southward to a junction with the Laconia Circle levee.

Authorization.—Flood Control Act of May 15, 1928, as amended.

Benefit-cost ratio.—3.89 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	$10,507,500	
Local cash contributions	(1)	
Authorized project cost	10,507,500	
Appropriation to June 30, 1954	6,860,100	
Appropriation for fiscal year 1955	205,000	
Appropriation to date	7,065,100	70
Appropriation requested for fiscal year 1956	250,000	73
Balance to complete	3,192,400	

[1] None required by law.

PHYSICAL DATA

Levees: Length, 41 miles.

Outlet structures: 2, Little Island Bayou and Deep Bayou.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Lands and damages	79	1956.
Levees	66	1961.
Outlet structures	100	
Entire project	66	After 1961.

JUSTIFICATION

The project, when completed, will provide protection for 149,000 acres of agricultural and timber lands from floods of the Mississippi and White Rivers, except in extreme high flood, in which case about 3 million acre-feet of water will be diverted into the area in order to provide safety to the main line Mississippi River levees below the mouth of White River. The flood of 1937 caused damages amounting to $124,000 while a recurrence of this flood under present conditions would cause damages estimated over $400,000. Annual flood control benefits for the project are presently estimated at $1,616,000. Although the existing levee is continuous, it is not to grade and section and would present a serious threat to local people in case of a large flood. The completion of the project in the near

future is needed to prevent recurring flood losses. The levee district responsible for local cooperation has fulfilled their agreements and will continue to do so as the future work progresses.

Fiscal year 1956.—The requested amount of $250,000 will be applied as follows:

Lands and damages	$6,000
Initiate levee construction at Ratio, Ark	215,000
Engineering and design	9,000
Supervision and administration	20,000
Total	250,000

The construction of the proposed work will bring an additional 5 miles of levee to project grade and section making a total of approximately 15 miles of levee complete. This construction is required to raise the levee grade to design flow line and to flatten the riverside slopes at locations where frequent slides occur. During flood seasons the slides cause the levee to be placed under severe attack thereby causing costly maintenance during the emergency. The area of some 149,000 acres protected by these levees is in a high state of development and in order to afford a measure of protection to the area, continued progress must be made toward completion of the project.

Mr. MARSHALL. Will you give us a statement on this item, General?

General HARDIN. The Lower White is a project of several increments. There are several local protection projects in conjunction with it, but the main element is at the lower end of the White, the one that we call the White River backwater project.

This, in effect, is a reservoir which is available to the project for taking off the top of the project flood as it reaches that latitude, and reducing the need for building levees continuously higher. That area is very fertile and it is highly desirable to utilize it as long as it can be utilized. That is, again, what is called partial protection, and the project calls for building a levee to a grade which will be overtopped before a project flood does occur. It will be overtopped through several spillway areas that are built into the levee system, but it also provides for some floodgates through the levee so that when the water is impounded in there it can be released and have the land returned to agricultural purposes.

Mr. MARSHALL. As you build each one of these segments that you pointed out on the map is each one effective in itself, or does the whole project have to be built before it is of benefit?

General HARDIN. Each segment has a usable benefit.

Mr. MARSHALL. Just looking at the map, it would seem to me that it would all have to be built before it is effective. How does each part you do have usefulness when there are gaps in between?

General HARDIN. The work was done in stages. You will notice the yellow stage just under the word "Helena" there. There is a levee there, but it has been built to an inadequate grade and it had to be because the ground is so soft that you cannot complete it to the full height initially. The remaining part of that project is to the bring that levee to full grade.

The levee that is there now affords a degree of protection, but not the degree of protection which the benefit-cost ratio is based upon, but there is an inadequate levee there at the moment. It is wetted more frequently than it should be, and until we do get the levee completed in its entirety it will not be fully effective. It is about 70 percent complete.

LOWER ARKANSAS RIVER

Mr. MARSHALL. The next is the lower Arkansas River. We will insert pages 48, 49, and 50 of the justifications in the record at this point.

(The matter referred to is as follows:)

LOWER ARKANSAS RIVER (CONTINUING)

Location.—The lower Arkansas River feature consists of flood-protection works along the north and south banks of the Arkansas River below Pine Bluff, Ark.

North bank: The completed levee will extend from the vicinity of Tucker, Ark., down Plum Bayou to its confluence with the Arkansas River, thence down the north bank of the Arkansas River to opposite Gillette, Ark., and thence to high ground in the vicinity of Gillette, Ark.

South bank: This levee is located along the south bank of the Arkansas River, extending from Pine Bluff, Ark., to the junction with the west bank Mississippi River levee system about 12 miles above Arkansas City.

Authorization.—Flood Control Act May 15, 1928, as amended.

Benefit-cost ratio.—4.82 to 1.

Summarized financial data

NORTH BANK ARKANSAS RIVER LEVEE

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	$11, 910, 000	
Local cash contributions	(1)	
Authorized project cost	11, 910, 000	
Appropriation to June 30, 1954	3, 746, 400	
Appropriation for fiscal year 1955	480, 000	
Appropriation to date	4, 226, 400	36
Appropriation requested for fiscal year 1956	500, 000	40
Balance to complete	7, 183, 600	

SOUTH BANK ARKANSAS RIVER LEVEES

Authorized Federal cost	$15, 340, 000	
Local cash contributions	(1)	
Authorized project cost	15, 340, 000	
Appropriation to June 30, 1954	13, 053, 700	
Appropriation for fiscal year 1955	0	
Appropriation to date	13, 053, 700	85
Appropriation requested for fiscal year 1956	0	85
Balance to complete	2, 286, 300	

[1] None required by law.

Physical data

	North bank	South bank
Levees:		
Average height	13.5 feet	22.9 feet.
Length	67.5 miles	85.6 miles.
Floodgates, number	27	7.

Status (Jan. 1, 1955)

	Percent	Completion schedule
North bank:		
Lands and damages	45	
Levees	46	
Floodgates	15	
Entire project	34	1964.
South bank:		
Lands and damages	90	
Levees	92	
Floodgates	100	
Entire project	85	1964.

JUSTIFICATION

The north bank levee affords protection to approximately 568,000 acres of highly developed productive farmlands, numerous highways and municipalities, and a railroad. A failure in this levee would result in loss of production of cotton, corn and rice, and disruption of important facilities that would seriously affect the economy of this region inasmuch as a large number of small industries such as cotton gins, compresses, cotton-oil mills and rice-processing plants depend upon agricultural production.

The south bank levee is an integral part of the west bank Mississippi River levee system and affords protection to approximately 3 million acres of highly productive farmlands, numerous municipalities, railroads, oil and gas fields, highways, and other developments in both Arkansas and Louisiana. A failure in this levee during a major flood would have a disastrous effect comparable to a break in the main line Mississippi River levee protecting the area.

Fiscal year 1956.—The requested amount of $500,000 will be applied to the north bank levee as follows:

Lands and damages	$18,000
Completion of Cooper Island levee	30,900
Flat Bayou drainage structure	215,600
Above Hannaberry Lake enlargement	134,000
Engineering and design	60,900
Supervision and administration	40,600
Total	500,000

Cooper Island levee.—This reach of levee, approximately 3.3 miles, is from 4 to 6 feet below grade and deficient in section. The work was initiated in fiscal year 1955 and will be completed with funds requested for fiscal year 1956. This reach of levee is located in about the center of approximately 18.3 miles of the north bank levee that has already been completed to grade and section.

Flat Bayou drainage structure.—The drainage structure is inadequate and requires additional capacity. Erosion at the existing outlet structure has placed the structure in danger of failure. Failure of this structure, located near the upper end of the north bank levee system, during a large flood, would result in the entire area being overflowed.

Above Hannaberry Lake enlargement.—Construction of this item will add 1.8 miles to the continuous levee upstream bringing the total to approximately 25 miles. The existing levee is approximately 6 feet below grade and deficient in cross-section.

Mr. MARSHALL. We will be glad to have your statement on this project, General.

General HARDIN. The lower Arkansas River is really in two parts again. The south bank of the Arkansas River, beginning at Pine Bluff has a levee which is, to all intents and purposes, a part of the main-line levee on the Mississippi River. It is the barrier at the head of that great basin, which is called the Tensas-Boeuf Basin.

The other part of this project is on the north bank, and is a levee line to protect the area from headwater flow and from backwater flow of the Mississippi.

The south bank levees were given preference, of course, being part of the main-stem protection system, and they are much farther advanced, as you will see by the summary, in percentage of completion than the north bank. The degree of completion is 85 percent for the south bank and for the north bank at this time it is only about 36 percent.

The north bank levees are in as dangerous a position as any levees in the whole basin from the standpoint of being inadequate if we should be visited by another flood of major proportions, and some portions of that levee line are as much as 5 feet or 6 feet deficient, which is away beyond what you could undertake in the way of a flood flight if high water should come.

Mr. MARSHALL. In last year's hearings, General, there was some indication that there were problems in connection with securing rights-of-way for this project. Have those problems been completely resolved?

General HARDIN. Yes, sir; we have been fortunate in getting that situation cleared up so that on the north bank levees we are at the present time building in the reach of the line which had given some problem from a real-estate acquisition standpoint.

I see no obstacles in our continuing. There was a difference of opinion at that time as to where the levee should be located which resulted in that real-estate problem.

TENSAS RIVER BASIN

Mr. MARSHALL. The next subproject is the Tensas River Basin. We will insert pages 51 through 54 of the justifications in the record at this point.

(The matter referred to is as follows:)

TENSAS RIVER BASIN (CONTINUING)

Location.—The Tensas River Basin includes the Boeuf and Tensas Rivers and Bayous LaFourche and Macon. It is located in southeastern Arkansas and northeastern Louisiana, and extends south and east of Pine Bluff, Ark., between the Mississippi River and the Bayou Bartholomew-Ouachita River system southward to the latitude of Sicily Island, La. The Red River backwater part of this project protects the Tensas-Cocodrie area in Concordia Parish, La.

Authorization.—Flood Control Act of May 15, 1928, as amended.

Benefit-cost ratio.—3.63 to 1.

Summarized financial data

BOEUF, TENSAS, LAFOURCHE, ETC.

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	$20,781,000	
Local cash contribution	(1)	
Authorized project cost	20,781,000	
Appropriation to June 30, 1954	8,575,000	
Appropriation for fiscal year 1955	1,727,000	
Appropriation to date	10,302,000	49
Appropriation requested for fiscal year 1956	1,800,000	58
Balance to complete	8,679,000	

RED RIVER BACKWATER LEVEES, LOUISIANA

Authorized Federal cost	$8,653,000	
Local cash contribution	(1)	
Authorized project cost	8,653,000	
Appropriation to June 30, 1954	7,262,400	
Appropriation for fiscal year 1955	340,000	
Appropriation to date	7,602,400	88
Appropriation requested for fiscal year 1956	85,000	89
Balance to complete	965,600	

PROTECTION TENSAS-COCODRIE AREA [2]

Authorized Federal cost	$5,347,000	
Local cash contribution	(1)	
Authorized project cost	5,347,000	

[1] None required by law.
[2] No work is planned for the protection of additional areas in the Tensas-Cocodrie area until the Old River control works become effective.

PHYSICAL DATA

Boeuf, Tensas, LaFourche Channels

Stream	Channel enlargement, realinement or new channel	Clearing and snagging or cleanout	Total improved length
	Miles	*Miles*	*Miles*
Boeuf River	54	63	117
Bayou Macon	0	170	170
Tensas River	11	88	99
Big and Colewa Creeks	81	0	81
Bayou LaFourche	43	0	43
Big Bayou	33	0	33
Canal 19	76	0	76
Canal 43	10	24	34
Canal 81	19	16	35
Total			688

Red River backwater

Levees: Height, 13 to 20 feet; length, 94 miles.

Drainage: 16 floodgates varying in size from 24 inches in diameter to the Bayou Cocodrie floodgate which consists of five 10- by 15-foot, concrete boxes. The plan includes approximately 17 miles of interior major drainage ditches for diversion of interior drainage blocked by the levee.

Levee roads: 94 miles of gravel roads on levees.

Status (Jan. 1, 1955)

BOEUF, TENSAS, LAFOURCHE, ETC.

	Percent	Completion schedule
Boeuf River	36	1956
Bayour Macon	0	1962
Tensas River	7[1]	1962
Bayou LaFourche	98	1955
Big and Colewa Creeks	80	1961
Big Bayou	30	1956
Canal 19	0	1960
Canal 43	0	1961
Canal 81	0	1961
Entire Boeuf, Tensas, LaFourche project	[1] 41	1962

RED RIVER BACKWATER LEVEES

Levees	97	1955
Interior drainage	95	1956
Levee roads	0	1961
Entire Red River backwater project	83	1961

[1] 231 miles complete.

JUSTIFICATION

The Boeuf, Tensas, LaFourche feature is an important unit in the overall plan for flood control. The completed project will materially reduce the extent and duration of headwater overflow by streams in the Boeuf-Tensas basin. Five hundred seventy two thousand seven hundred acres of land subject to headwater flooding, of which 126,300 acres are cropland, will be either fully protected or materially benefited. An additional 192,500 acres, of which 100,800 are cleared, will be directly benefited by improved drainage as a result of the project.

The Red River backwater levee portion of the project is essentially complete except for the Buckner Bayou diversion ditch and the roads on the levees. The completion of the Buckner Bayou diversion is essential in that it will be the main artery and collector ditch for interior drainage in the upper portions of the area. This project provides protection to 342,000 acres of agricultural lands.

Fiscal year 1946.—Boeuf, Tensas, LaFourche, etc.: The requested amount of $1,800,000 for the Boeuf, Tensas, LaFourche feature will be applied as follows:

Lands and damages	$127,000
Relocation of highway bridge, Big Bayou, reach 3	37,000
Relocation of highway bridge, canal 19:	
reach 1	158,800
reach 2	47,000
reach 2	138,600
Relocation of utilities, canal 19, reach 2	8,600
Channel improvement, Boeuf River:	
reaches 3 and 4	88,800
reach 5	205,200
reach 6	156,000
Channel improvement, Big Bayou, reach 3	256,000
Channel improvement Canal 19, reach 1	329,000
Engineering and design	116,100
Supervision and administration	131,900
Total	1,800,000

The Boeuf River-Bayou LaFourche-Canal 19 channels comprise the main drainage artery of the basin and benefits accrue as the work progresses upstream. Work on this artery in the State of Louisiana will be virtually completed with fiscal year 1955 funds. Landowners in the State of Arkansas, with the aid of other Federal agencies, have made extensive progress in providing drainage for their farms. These improvements will be of little value until the improved main drainage arteries are extended upstream. In years past, the people of Arkansas spent large

sums in developing a major drainage system which became ineffective when the work was not extended past the Arkansas-Louisiana State line.

Red River backwater: Completion of Buckner Bayou diversion ditch	$85,000
Total, Tensas Basin	1,885,000

Mr. MARSHALL. We would appreciate your statement on this project, General.

General HARDIN. The Tensas River Basin project is in that region which is south of Pine Bluff, and is bounded on the left by the escarpment of the hills indicated by the pointer, and the Mississippi River on the east.

There are a number of streams in that basin, the Boeuf being the major one, and as you can see it goes not only through Louisiana, but up into Arkansas.

Then, there is the Tensas, which is the drainage line closer to the River. There is another just west of there called Bayou Macon, and then another one to the west called Big Creek, and the last one Bayou La Fourche.

This area was, at one time in the life of this project, a floodway. It was reserved for overflow in time of great floods, in keeping with the concept that you cannot confine the greatest floods that you might expect within the River line of the Mississippi main system.

However, with the improvements that have been made in the carrying capacity of the Mississippi below Helena, as a result of the cut-off program, it was possible to give up that area as a floodway, remove that servitude and return it to agricultural and other development.

It was necessary, however, as a result of interrupting the drainage of that basin as it existed in nature, by reason of straightening the Tensas levee line, to change the drainage pattern.

The local interests undertook to do that first after the 1928 flood-control project and had spent large sums of money in northern Arkansas in an effort to relocate the drainage lines through that country.

However, they were not able to complete the undertaking because in Louisiana a much larger problem existed of improving the drainage on those tributaries which I have outlined, and for years the investment that Arkansas had put into the program was rather nullified by the lack of an outlet.

Therefore, this project that we refer to as the Tensas River Basin provides for improving the outlets of the major streams of this basin, and adding to what the States have done.

I might also give due credit to Louisiana for having embarked also on a large drainage program in their area. So, now we are able to provide Arkansas with an outlet for the impounded water which previously had prevented them from profiting from their investments.

The project has reached a state of completion so that it is about half done.

We are well through two of these lines in Louisiana, necessarily having to work from the lower end north. We have gotten up to the Arkansas line with that one on Bayou Boeuf, and the Tensas has been completed as far as it was planned to go.

We are now recommending that we proceed with the undertaking in the State of Arkansas using the funds according to the plan set forth in the justification on page 53.

RED RIVER BACKWATER LEVEES

Mr. MARSHALL. Last year the committee was told that the Red River backwater levees would be completed in 1955. I notice that these justifications say they will not even be finished in 1956. What happened to that part of the project?

General HARDIN. Well, that is another element of the Tensas Basin project.

Now, the Red River backwater area is an area which is encircled by a levee line, but in addition to that it has some drainage improvement that is necessary to include in the undertaking so that the water that falls in the area is not impounded.

Last year, I believe the data to which you have reference, Mr. Chairman, was to the point that the levee itself would be completed, but that there remained certain work to be done in the diversion of these waters that would flow within the area. At least, that is my impression at the moment without refreshing my memory on the subject. In all probability it was my testimony to which you referred.

Mr. MARSHALL. Did you loan any money from this project last year?

General HARDIN. Can you answer that, Mr. Bush?

Mr. BUSH. No, sir; we did not loan any money from it.

General HARDIN. I am not aware of any. I believe Mr. Bush is correct on that.

IMPROVEMENT OF DRAINAGE

Mr. MARSHALL. I notice on page 53 of the justifications you claim benefits to about 200,000 acres of land as a result of improved drainage. Roughly, how much of the cost of the lower Mississippi project is attributable to or aimed at improving existing drainage?

General HARDIN. Well, I am not able to give you offhand too precise an answer on that, Mr. Chairman, but I can point out to you the areas in which drainage is an inherent part of this development, and, as you might say, a consequence of the undertaking.

Now, I mentioned that we intercepted drainage by building a levee line across it there, in the northern portion of the Tensas Basin at a place called Cypress Bayou.

That is typical with a number of places in this comprehensive undertaking.

We intercept drainage in a number of places along the river, one being up there in that region to which Mr. Bush is pointing. It will be necessary to put in a gate and do some work to prevent the river from backing up through there, as well as to let the water out which was impounded.

Another area where drainage has been affected is there in the upper reaches of the Tensas Basin where Nature originally had a very big outlet in the northern part of the basin, but there is no way to allow that outlet to continue, if we are going to have effective flood protection, and that had been the trouble with the project as it existed in the colonial or the early days of the valley.

General Grant went in there, I believe, and broke the levees during the Civil War, so he could get gunboats in that place, because it was still a feasible channel, although it had been blocked off.

Mr. MARSHALL. General Hardin, how much land is being reclaimed in that particular area because of the work of the Engineers?

General HARDIN. In this entire basin?

Mr. MARSHALL. No; in this particular part which you are talking about.

General HARDIN. My information would indicate that there are over a half million acres of land subject to headwater flooding in this basin, of which 126,000 acres are cropland, which will be either fully protected or materially benefited, and an additional 192,000 acres, of which 100,000 are claimed to be directly benefited by improved drainage as a result of the project.

Mr. MARSHALL. Of course, a great number of acres of that land is presently being farmed?

General HARDIN. That is correct, sir.

Mr. MARSHALL. My question was with regard to how much had been reclaimed, which would be taking land out of the raw state, and putting it into cultivation?

General HARDIN. Up to the present time, I am not able to say with assurance that there is any of it that has been actually reclaimed, because the project has not advanced to the point where farmers are assured that their land will stay dry.

It is going to take a good bit of work yet to get this project up to the area, for instance, in Arkansas, where they are unable to reclaim any more land or to expand their agricultural activities, simply because it would not be a project which would pay out.

Mr. MARSHALL. Thank you, General.

OVERTON-RED RIVER WATERWAY

We have an inquiry about the Overton-Red River project. I checked the last annual report of the Chief of Engineers and note that it was listed as an inactive project; is that correct?

General HARDIN. We have never gotten beyond doing a very limited amount of planning in that undertaking. There have been no construction funds which have ever been provided for it.

It was my impression that it was an active project. Yes, it is still carried as "active."

Mr. MARSHALL. How much money has been spent on this particular project?

General HARDIN. In engineering and soil explorations, and so forth, about $190,000.

Mr. MARSHALL. How much do you estimate would be needed to complete the planning for this project?

General HARDIN. We feel that $1.2 million is a total for completing the engineering. Of course, that would be over a period of time not contemplating that the engineering would be completed before construction would begin; otherwise, there would be so much changed in your engineering that you would have to do a lot of it all over again.

Mr. MARSHALL. We note that in the 1954 report of the Chief of Engineers, United States Army, on civil works activities, that you do have it listed as an inactive project.

We would like for the record to be straight in this regard.

Mr. COHEN. If I might explain that, sir, the term "inactive" in the annual report refers to projects on which there is no work under way, and no work budgeted for the next year.

The term which we use for the inactive classification is different than the one in the annual report.

We consider that an active project.

Colonel WHIPPLE. I think, however, that is very unsatisfactory, and that we will have to clear up this nomenclature. It is obviously inconsistent to use the same word a different way for the same project, and we will correct that in future anual reports.

YAZOO RIVER BASIN

Mr. MARSHALL. The next item is the "Yazoo River Basin." We will insert pages 55 to 59 of the justifications in the record at this point.

(The pages referred to follow:)

Location.—The Yazoo River Basin project is located in Mississippi and extends generally from Memphis, Tenn., to Vicksburg, Miss., in a north-south direction and from the escarpment east of Greenwood, westward to the Yazoo-Sunflower drainage divide between Greenwood and Greenville. Four flood-control reservoirs are located in the eastern escarpment.

Authorization.—Flood Control Act approved May 15, 1928, as amended.

Benefit-cost ratio.—Yazoo headwater 2.95 to 1; Yazoo backwater 2.30 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	$174,000,000	
Local cash contribution	(1)	
Authorized project cost	174,000,000	
Appropriation to June 30, 1954	82,506,000	
Appropriation for fiscal year 1955	1,158,000	
Appropriation to date	83,664,000	48
Appropriation requested for fiscal year 1956	1,300,000	49
Balance to complete	89,036,000	--

[1] None required by law.

PHYSICAL DATA

Reservoirs:
- 4 reservoirs for flood control (Arkabutla, Sardis, Enid, and Grenada).
- Dams: Earth fill.
- Spillways: Uncontrolled.
- Outlet works: Design capacity, 40,100 cubic feet per second.
- Gross storage capacity: 4,092,600 acre-feet.
- Conservation pools: 266,700 acre-feet.

Local protection:
- Greenwood:
  - Levees: 31 miles.
  - Pumping plants: New, 3; additional capacity, 2.
  - Channel: Pelucia Bayou diversion.
  - Relocations: ICRR and Highway No. 7 bridges.
- Yazoo City:
  - Levees: 4.0 miles; average height, 9 feet.
  - Channels: Yazoo River cutoff; 1.3 miles; average bottom width, 160 feet.
  - Storm pumping plant: 1; capacity, 240,000 gallons per minute.
  - Sanitary pumping plant: 1; capacity 2,600 gallons per minute.
  - Relocations: Sanitary sewer line; 18 inch; 1.7 miles.
- Belzoni: Levees: 0.4 mile; average height, 5 feet.

Auxiliary channels:
- Upper channel: Future work.
- Lower channel:
  - Levees: 63 miles; average height, 13 feet.
  - Channel: 32 miles; average depth, 23 feet.

Auxiliary channels—Continued
Lower channels—Continued
Drainage ditches: 50 miles; variable depths and widths.
Relocations:
Oil and gas lines: 13,000 feet.
U. S. Highway 49–W: 1 mile.
County roads: 4; 16,000 feet.
Powerlines: 12 miles.
ICRR: 1 bridge; 2,000 feet.
Telephone lines: 15,000 feet.
Main stem (Coldwater River levee portion only):
Levees: 72 miles; average height, 10 feet.
Drainage structures: 27 (variable sizes).
Major tributaries: Future work.
Minor tributaries: Future work.
Backwater area: Future work.

Status (Jan. 1, 1955)

	Completion schedule
Reservoirs:	
Sardis and Enid: 100 percent except for comfort station at Sardis	
Arkabutla: 100 percent except relocation U. S. Highway No. 51 over Hickahala Creek, and comfort station.	1958.
Grenada: 100 percent except for 3.0 miles of channel cleanout on Yalobusha River	1956.
Local protection:	
Greenwood: Except for Pelucia Bayou diversion, which has been deferred, the work is 97 percent complete.	Indefinite.
Yazoo City: The channel cutoff and adjacent levees are complete. The project is 29 percent complete.	1957.
Belzoni: The project has not been started	1957.
Auxiliary channels:	
Upper channel: Future work	Indefinite.
Lower channel: 2 percent	1959.
Main Stem (Coldwater River Levee portion only):	
Levees: 40 miles completed to interim grade	Indefinite.
Drainage structures: 16 structures completed	
Entire project: 36 percent	
Major tributaries: 15 percent	Indefinite.
Minor tributaries: 1 percent	Do.
Backwater area: 1 percent	Do.
Entire Yazoo Basin: 47 percent	Do.

JUSTIFICATION

The Yazoo project is based on a comprehensive plan of basin development. Under natural conditions, uncontrolled floodwaters from the 6,600 square-mile drainage area of the hill section disgorge onto the flat delta lands below. There are 2,300 square miles in the delta area. The area subject to overflow by headwater floods comprises 1,632,000 acres of land which produce cotton, corn, soybeans, oats, hay, and pasture for livestock. The project will provide protection against overflow to 1,247,000 acres, will materially benefit 299,000 acres, and will provide protection to Greenwood, Yazoo City, Belzoni, and numerous smaller communities. In addition, approximately 805,000 acres in the backwater area will be given protection against all but the larger floods. Construction of the plan of improvement is based on the priority of needs. The four reservoirs were constructed to hold back the floodwaters from the hills. The major streams are being improved to provide an outlet for local runoff and the controlled discharge from the reservoirs. The auxiliary channels are designed to provide additional capacity for existing streams and thereby eliminate costly levee construction. Work on the major and minor tributaries will result in increased channel efficiency. Improvements by local citizens have kept pace with the degree of protection afforded. They have expended large sums on clearing land, constructing lateral drainage systems, and converting to modern farming methods.

Fiscal year 1956.—The requested amount of $1,300,000 will be applied to:

Levees above and below the cutoff at Yazoo City	$110, 000
Acquisition of lands, lower auxiliary channel	150, 000
Relocation of bridges, roads, gas and oil lines, and U. S. Highway No. 49–W, lower auxiliary channel	332, 000
Channel excavation and levee construction, lower auxiliary channel	512, 000
Engineering and design	118, 500
Supervision and administration	77, 500
Total, Yazoo Basin	1, 300, 000

The channel cutoff at Yazoo City has been completed. Work has been initiated on the sanitary sewer line and storm pumping plant. Construction of the levees upstream and downstream is necessary in order to complete the project.

The acquisition of lands and relocation of roads and utilities is necessary for continuation of construction of the lower auxiliary channel.

Construction of the lower auxiliary channel is necessary to provide additional channel capacity on the Yazoo River. This feature will result in a reduction in the project flood flow line of 3 feet at Yazoo City and 7 feet near Silver City. This reduction will decrease the cost of levee construction on the Yazoo River proper and permit quicker runoff from the surrounding flat delta lands, thereby reducing duration of flooding on adjacent lands. The reduction in river stages will allow effective operation of the privately constructed drainage systems.

Mr. MARSHALL. General Hardin, we would be glad to have your statement on that project.

General HARDIN. The Yazoo River Basin, Mr. Chairman, is an undertaking which is designed to provide protection against both headwater flooding, and, again, backwater flooding, from the Mississippi.

This project extends from the latitude of Memphis to Vicksburg, and it includes not only the four reservoirs at the headwaters, but also includes provision for channel improvement, and in certain areas levee work, and in the lower areas, particularly, in the increasing of the flow capacity of the slow and tortuous river.

There are other features to this undertaking of local flood protection category, namely, at Greenwood, Yazoo City, Belzoni, and I believe one other small community.

Then, besides the Yazoo River problem, there is the Sunflower Basin, which is a separate basin.

This project is about 48 percent complete. The reservoirs are operating, and in this past spring prevented over $500,000 of damage.

At the time that the Tombigbee went in flood, the same storm was centered over this area, and in two successive heavy rainfalls, prevented very great damage in this Yazoo Basin.

The last reservoir, Grenada, was closed just last year.

The remaining work to be done in this basin is rather extensive, and located in a variety of places. However, the thing which is most urgent at the present time is now that we have the reservoirs operating to be able to release the water from them in such volumes as was contemplated in the project, so that the reservoirs would be ready to receive the next storm that comes along.

As it stands now, if we release the water from these reservoirs in the proportions that we would like to do it, it would only result of flooding of considerable portions of the basins. So, in effect, we are not getting the intended benefit from the reservoirs.

One of the first things that we must do, if the project is to provide the benefits expected, is to increase the capacity of the channels in the lower portion of the basin, where we are hopeful of creating an auxili-

ary channel from the point where the pointer is to the mouth of Big Sunflower at that location, the Big Sunflower being the next basin to the west.

With the funds which we have asked for under the 1956 budget, we would begin the relocation of some of the important crossings, bridges, roads, gas and oil lines, over this auxiliary channel, and we would also begin excavation and levee construction in this auxiliary channel.

The importance of that additional outlet in the lower portion of the basin is, in my opinion, of high priority on account of the inability to utilize the improvements fully which have already been completed in the basin.

Mr. MARSHALL. How much land is being reclaimed in this area due to your work in controlling the river?

General HARDIN. Well, I would expect, Mr. Chairman, that the reclaiming of lands would be somewhat along the lines over here of the basin across the river from it.

It is not completely predictable at this time.

The basin itself is a very large one, and there are over 1.5 million acres of land which are affected by these headwater and backwater floods.

A large portion of that land is already in production, and has been in production for a number of years.

Mr. MARSHALL. In the Yazoo Basin, a lot of the land is pretty level; is it not?

General HARDIN. It is extremely level, and that is its problem. It is so flat that water just stays.

Mr. MARSHALL. It verges on being a marsh; does it not?

General HARDIN. Yes, sir; and it was a marsh in its natural state, before the Indians were dispossessed. It was a great swamp, but it is the most fertile land in that region, and men for generations have gone to extreme lengths to clear it and use it for agricultural purposes.

Mr. MARSHALL. I note in the justifications that the authorized Federal cost for this area is $174 million, and it states that approximately 49 percent of it will be completed by the end of next year.

Is that figure of $174 million a realistic figure?

General HARDIN. Yes, sir; I think it is.

Mr. MARSHALL. How long a period of time is contemplated to complete this project?

General HARDIN. That is so dependent upon the decisions made in the Congress as to how fast money can be made available, that I do not know. This project has been under active construction now since the early 1930's and in those twenty-odd years we have brought it to the status of current completion, but of course the history of this undertaking is somewhat similar to the history of the whole valley, and that is that there have been successive increments of improvements authorized from time to time. Our percentages here are, of course, related only to the work that Congress has authorized. It is a problem that we are aware of, but we are not in a position to report to the Congress on it yet, and yet we hope to include some portion of it in the comprehensive review that is now in the making, and that has to do with the grave problem there of the hill tributaries.

There is a portion of this undertaking, and its cost is partially reflected in this large sum as yet unused of the authorization, for controlling that hill-tributary runout which is not only a flood and drainage problem, but there is a very destructive soil-erosion problem.

It is most distressing to see the hills in that area of Mississippi being destroyed by rapid erosion and the material carried by these hill tributaries which are reducing the effectiveness of the flood-control features that are in the lower portion of the basin.

Even the siltation of our reservoirs has got to be prevented, and the siltation of the streams that are yet to be improved for flood-carrying capacities are severely affected by this erosion problem in the hills.

Now, the plans for that have never been completely firmed up, and the authorization for it under this hill-tributary project is subject to approval of the Chief of Engineers, and the monetary authorization was a limited one, of course.

The Chief of Engineers from time to time passes upon the incremental additions to the hill-tributary undertakings, but we have not finished the engineering on it. We are working with the Soil Conservation Service in part, and we have joint lines of participation.

Mr. MARSHALL. General, is it not a fact that most of the work which is being done on the Yazoo River is to control a flood in that basin? It is not for the effect which it has after it reaches the Mississippi.

General HARDIN. Yes, sir; I would think your observation is right. It is primarily to control the floods within the basin, but there is another problem which we would not yet even initiate, and that is a backwater protection project which, when the Mississippi gets in great flood, it will flood that whole region up to the latitude approaching Greenville, and inundate a large area.

Now, the project provides for a backwater levee, which will have the effect of reducing and not eliminating entirely, but reducing that backwater flood. However, to answer your question, and maybe I am beginning to see the import of it, the contribution from the standpoint of runout from that area into the Mississippi, while it is a substantial runout, it is not one which would influence materially the Mississippi River project as a whole.

The maximum flood, for instance, that we could reasonably expect to come out of the Yazoo, I believe, is in the neighborhood of 150,000 second-feet, and while that is material, it is not anything like—well it is about 150,000 against 2.5 million.

Mr. KIRWAN. General, did you ask the Bureau of the Budget for more money for this project?

General HARDIN. Well, sir; we were allowed only this much by the Bureau of the Budget.

Mr. KIRWAN. That is, you were allowed only this amount that you are requesting?

General HARDIN. Yes, sir.

SCHEDULE FOR COMPLETION

Mr. KIRWAN. I think it is wrong on the part of the Bureau of the Budget to only allow $1.3 million on a project which is so important as you have explained it here. It has been under construction for 20 years now, and is only 49 percent complete, or will be only 49 percent complete by the end of next fiscal year.

General HARDIN. Yes, sir.

Mr. MARSHALL. At this rate it would take a good many years to complete the project.

Mr. KIRWAN. It would take 20 more years, which would be a total of 40 years, and the project is very important.

Mr. MARSHALL. If it is not important, it should be discontinued.

Mr. KIRWAN. As General Hardin has explained it, it is easy to see the importance of it. Why they were only allowed this $1.3 million on a project as important as this, especially when you cannot obtain the benefits from it until it is completed, is a mystery to me.

We have now put into it almost half of the money, $83 million, and you will not obtain the benefits until it is completed. There is something lacking somewhere.

I am not blaming it on the Army engineers, but I think it would pay the people in the Bureau of the Budget, and it might help their morale, to get out and take a trip on the Mississippi.

General HARDIN. Mr. Chairman, I would not want the record to be confused by the statement which I made earlier.

I started to refer to the Big Sunflower project, which is in that basin, but it is carried under a different series of justification sheets, and no money being allowed for it, there is no description of it. However, the Big Sunflower project, and the Steel Bayou project are very important tributaries of this Yazoo Basin, which is the so-called delta region of Mississippi.

What I had described to you had to do only with the Yazoo Basin.

Mr. BOLAND. How much money did you request from the Bureau of the Budget for fiscal year 1956 for the Yazoo River Basin?

General HARDIN. I will have to get my record out, sir.

Mr. BOLAND. Anyway, the amount allowed by the Bureau of the Budget is $1.3 million, and will only bring the project from 48 percent of completion to 49 percent of completion, or an increase of 1 percent for 1956, as I read these figures here.

General HARDIN. The so-called within ceiling request was $2,073,000 for the Yazoo River Basin, and $65,000 for the Sunflower, and Steel Bayou area, which I have just mentioned.

Mr. BOLAND. How much was the last figure, again, for the Big Sunflower project?

General HARDIN. $65,000 for the initiation of some real estate acquisition, so that we would be in a position to initiate the actual construction on the Big Sunflower, and Steel Bayou at a later date.

Mr. BOLAND. Has much work been done on the Big Sunflower?

General HARDIN. Yes, sir; in the lower 20 miles of the Big Sunflower, it has been improved, but it was stopped just about where the pointer is.

Mr. BOLAND. That is all; thank you.

ATCHAFALAYA RIVER BASIN

Mr. MARSHALL. The next project is the Atchafalaya River Basin. We will insert pages 60 through 64 of the justifications into the record at this point.

(The pages referred to follow:)

ATCHAFALAYA RIVER BASIN (CONTINUING)

Location.—The project is located in south-central Louisiana below the latitude of Old River and west of and generally paralleling the Mississippi River. The basin is approximately 110 miles long by 45 miles wide. The Atchafalaya River flows through the middle of the basin.

Authorization.—Flood Control Act approved May 15, 1928, as amended.

Benefit-cost ratio.—Inasmuch as the Atchafalaya Basin will carry one-half of the project flood, the costs and benefits have been included in the computations for the main stem of the Mississippi. The ratio is 6.50 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	$129,560,000	
Local cash contribution	(1)	
Authorized project cost	129,560,000	
Appropriation to June 30, 1954	109,770,700	
Appropriation for fiscal year 1955	3,925,000	
Appropriation to date	113,695,700	88
Appropriation requested, fiscal year 1956	4,200,000	91
Balance to complete	11,664,300	

[1] None required by law.

PHYSICAL DATA

Levees: Average height, 18 feet; length, 454 miles.
High-level crossings:
  Morganza Floodway:
    U. S. Highway No. 190; length, 5 miles.
    N. O. T. & M. Ry.; length, 5 miles.
    T. & P. Ry.; length, 7 miles.
  West Floodway:
    U. S. Highway No. 190; length, 10 miles.
    N. O. T. & M. Ry.; length, 8 miles.
Pumping plants:
  Number, 10.
  Capacity:
    Minimum, 50 cubic feet per second (22,500 gallons per minute).
    Maximum, 1,000 cubic feet per second (450,000 feet per minute).
    Average, 300 cubic feet per second (135,000 gallons per minute).
Channels: Size, varying dimensions; length, 28 miles.
Drainage structures:
  Pointe Coupee, 2 gates, 10.5 by 15 feet.
  Melville, 72-inch pipe.
  Darbonne, 10 by 10 feet.
  Bayou des Glasies, 72-inch pipe.
  Bayou Courtableau, Weir type.
  Brushy Bayou, 5- by 6-foot gated.
  Bayou Courtableau, 5 barrel, 10 by 15 feet.
Floodgates:
  Chareton, sector gated, 45 feet wide.
  East Calumet, sector gates, 45 feet wide.
  West Calumet, sector gated, 45 feet wide.
Locks:
  Bayou Boeuf, 75 by 1,120 feet, earth chamber.
  Bayou Sorrel, 56 by 760 feet, earth chamber.
  Berwick, 45 by 300 feet, concrete.
Bayou Rapides, Boeuf and Cocodrie:
  New channel, 59.8 miles.
  Channel enlargement, 1.4 miles.
  Channel clearing, 31.0 miles.
  Structures, 3.

Status (Jan. 1, 1955)

	Percent	Completion schedule
Entire project	85	1959.
Levees (approximately 408 miles complete)	88	1959.
High-level crossing: 4 complete	80	1959.
Pumping plants: 2 complete	10	1959.
Channels	50	1958.
Drainage structures: 6 complete	75	1957.
Floodgates	100	
Locks: 2 complete	99	1955.
Bayous Rapides, Boeuf and Cocodrie	76	1958.

JUSTIFICATION

General.—The Mississippi River below the latitude of Old River is capable of carrying only 1,500,000 cubic feet per second without threatening the integrity of the levees along its banks which protect thickly populated areas, highly developed agricultural lands, industries, and the city of New Orleans. Studies have indicated that the project flood against which the flood control protection works are designed will be of such magnitude that 3 million cubic feet per second will pass the latitude of Old River. Since the Mississippi below this latitude can carry only one-half this amount, the other one-half must be diverted from the main channel. This diversion is made through the natural channels of the Old and Atchafalaya Rivers, and through the Morganza and Atchafalaya Floodways. In order to prevent diverted waters from spreading over the rich agricultural lands in the Atchafalaya Basin, these rivers and floodways have been leveed to confine the diverted flow. It is essential that the work proceed vigorously and as expeditiously as possible, in order to eliminate unnecessary flood damage. This floodway system is for all practical purposes a part of the main river system, since the integrity of the main river system depends upon its utilization. Since this construction began, people have developed their farms and industries have moved into these areas adjacent to the floodway and with full confidence that they would receive protection. Therefore, overtopping or crevassing of the levees would cause far more damage than when the project first started. Due to foundation conditions in some localities the levees sometimes become deficient, due to consolidation of the soil. These levees must be maintained at the proper grade. Interrupted drainage has been diverted into natural sump areas and gaps have been left in the levee to prevent impoundment of local rainwater. During floods such as that of 1950, these gaps must be closed at great cost to the Government with increased damages on the interior lands because of the additional amount of water impounded. Drainage structures and pumping plants must be provided so that these gaps can be closed and high flood-fighting costs eliminated. The main protection levees, especially below the latitude of Krotz Springs, are almost inaccessible except by boat during high water. It is important that they be brought up to grade in order that roadways can be constructed on them so that the necessary men and equipment can be moved to any threatened spot during an extreme flood. This inaccessibility adds additional costs to flood-fighting operations which would not be necessary if the levees were brought to grade and access roads constructed upon them.

Fiscal year 1956.—The requested amount of $4,200,000 will be applied to:

Atchafalaya Basin floodway:	
Right-of-way	$130,000
Flowage easements below latitude of Krotz Springs	40,000
Relocation of U. S. Highway No. 190, West Atchafalaya floodway	1,294,300
N. O. T. & M. high-level crossing of West Atchafalaya Floodway	60,000
Levee access roads, Courtableau-Henderson, West Atchafalaya Basin protection levee	41,400
Levee access roads, East Atchafalaya Basin protection levee between Little Bayou Pegeon and Belle River Ferry	41,300
Dredging, lower Whiskey Bay to Six Mile Lake Reach, Atchafalaya Floodway	416,800
Interior drainage high-level, Yokely, Franklin, and Centerville areas	46,100
Gap closure Wax Lake outlet east levee south of S. P. R. R. tracks	1,200
Avoca Island Cut-Off Bayou, 2d lift hydraulic fill, East Atchafalaya Basin protection levee	399,200
Wax Lake east levee topping	87,000
Wax Lake west shaping to grade and section	17,400
Wax Lake east and west gap closures, Bayous Possum and Blue	91,300
Closure Bayou Boeuf, phase 2	13,100
Ellerslie drainage area, completion of levees	7,800
Bayou Yokely drainage area, completion of levees	8,300
Engineering and design	350,400
Supervision and administration	458,400
Total	3,500,000
Courtableau drainage:	
Inlet and outlet channels	400,700
Courtableau drainage structure	240,900
Engineering and design	200
Supervision and inspection	58,200
Total	700,000
Grand total	4,200,000

Right-of-way is needed for the proposed work.

Acquisition of flowage easements below Krotz Springs is 23 percent complete. Payments are made as rapidly as claims are processed.

U. S. Highway 190 high-level crossing is the last one to be constructed. Funds requested will bring this item to 20 percent completion and will continue the work at an economical rate.

Funds for the N. O. T. & M. Ry. high-level crossing are for necessary track adjustments on the recently completed fill.

Funds for the T. & P. Ry. are to adjust the tracks over the levees at Melville and Palmetto.

Levee access roads are needed so that inspection, maintenance, and flood-fighting operations can be carried out.

Dredging is necessary in the lower reaches of the basin in order to develop a single efficient channel for the Atchafalaya River. A large number of channels exist which cause sediment deposition as a result of crossflow. The material deposited across the basin acts as a low dam and causes increased flood heights which endanger the levees. The proposed work will close side channels and provide adequate cross sectional area at localities which obstruct natural channel development in the lower Whiskey Bay-Six Mile Lake reach.

The work at Yokely, Centerville, and Franklin will provide a means of carrying intercepted drainage to the pumping stations which will be complete.

A small gap in the Wax Lake east levee must be closed.

The east Atchafalaya protection levee from Avoca Island to Cut-Off Bayou has now consolidated to a point where additional material can be placed. Several years are required to complete levees in this area and the work should be done as rapidly as foundation conditions permit.

The three items for levee topping, shaping to grade, and gap closures are necessary to bring existing levees to grade.

The work at Bayou Boeuf will complete the closure of the bayou at the Bayou Boeuf lock site.

The two items for Bayou Yokely and Ellerslie will complete the tie-in levees at the pumping stations.

The work on Courtableau drainage will complete the Bayou Courtableau structure and channels.

Mr. MARSHALL. General Hardin, will you give us a brief statement on this item?

General HARDIN. This Atchafalaya River Basin is extremely important to the concept of this flood control project in that it is the means of getting one-half of the project flood into the gulf, the other half going by way of New Orleans, and the Old Channel to the gulf.

It is, in effect, then, a floodway which was provided for in the initial concept of this 1928 project. We are there faced with making provisions for improving a channel and at the same time we are endeavoring to limit the amount of flooding in the area concerned.

We have a severe problem there. It is a very soft and unsupported type of soil. We, as you see, have built what are called basin levees to define the floodway, one on the west and one on the east. In addition, the Atchafalaya itself has a levee along its banks to confine the flow partway down the basin, and then on either side of the river proper we have a floodway called the West Atchafalaya Floodway and one on the east called the Morganza.

Now, the problem there is to bring these levees up on the basin sides to confine the project flood, and we run into a very complicated problem down there in the latitude of Morgan City where the Intra-Coastal Waterway runs across this floodway.

Then to the east we have a problem of insuring protection to an extremely rich and productive area which is the Sugar Bowl of Louisiana.

At the present time this project is well advanced, and a good bit of effort has been expended upon it, as well as money.

As you see, we now have it about 88 percent complete. The importance of it, though, to the highways and railroads which cross it at several places, makes it necessary to provide these crossings which would be secure even in time when it is being used as a floodway.

Those crossings are essentially complete, except for the relocation of U. S. Highway No. 190 across the West Atchafalaya Floodway, and of course there is a continuing problem of increasing the capacity of these levees, and bringing them up as the foundations will accept the burden, and trying to get a levee height which will be adequate to control and confine the flowline of the project flood.

However, that area is filling, and it is filling as a natural process from the siltation that comes in from the Red River, the increased flow from the Mississippi by way of Old River which I have discussed briefly, and the scouring of the Atchafalaya upper region, and depositing all that material as a natural phenomena in the lower basin.

It is one of the things which we have been encouraging, because the basin was not ready to accept in its natural conditions about half of the flood which it is designed to pass through.

Now, we are proposing to use some of next year's money, as you can see, for doing some dredging in that lower basin, which will have the effect of assisting nature in scouring the channel in that river out,

to deep water, and overcome the tendency of the basin to continuously fill, and fill faster than we can raise the levees to confine the flood flows.

We feel now that there is assurance that we will be allowed to proceed with the control structures up there at Old River, so that the river will not get away from us, and so that we can, with safety, encourage the lower river to increase in size and carrying capacity, and reach this objective, which has long been sought of having the basin there ready to receive one-half of the project flood.

Each year that goes by, we hope that the project flood will not hit us, because we know that the Atchafalaya Basin is not ready to receive it, and it is with that objective in view that we recommend the funds which you see here for dredging in the lower Whiskey Bay, Six Mile Lake reach of the Atchafalaya Floodway.

Other items which you will see in that list are to complete or to further advance undertakings which are designed to prevent the flood from spreading east and west at the latitude of Morgan City.

That has been a major undertaking in that region, because you have channels that would lead water off if they were not controlled.

There are also areas which have to be provided with certain levees to keep them above the flood flows, which we are encouraging to be placed upon that portion of Louisiana.

Mr. MARSHALL. I notice on page 63 of the justifications the statement "right-of-way is needed for the proposed work."

What assurances do you have that this will be provided?

General HARDIN. That comment refers to items in the listing above, Mr. Chairman. You will see that we have an item for $130,000 for right-of-way in the Atchafalaya Basin Floodway. We have to provide the right-of-way for doing the things that are included in this project.

We have placed a servitude on those acreages, which would not suffer at the time the natural conditions were there. We have to pay for flowage easements, and we have to pay for the right-of-way for crossings, and it is that which this comment refers to when we say "right-of-way is needed for the proposed work."

The money is largely included in the listing, but that is the intent of the statement.

Mr. MARSHALL. There is no local contribution, then, providing this right-of-way?

General HARDIN. No, sir.

LAKE PONTCHARTRAIN

Mr. MARSHALL. The last construction project is Lake Pontchartrain. We will insert pages 65 and 66 of the justifications into the record at this point.

(The pages referred to follow:)

LAKE PONTCHARTRAIN, LA. (CONTINUING)

Location.—The project is located on the south shore of Lake Pontchartrain, in Jefferson Parish, La., and extends from the Orleans Parish line to the St. Charles Paris line.

Authorization.—Flood Control Act approved May 15, 1928, as amended.

Benefit-cost ratio.—1.59 to 1.

Summarized financial data

	Amount	Accumulated percent of estimated Federal cost
Authorized Federal cost	$3,150,000	
Local cash contributions	1,050,000	
Authorized project cost	4,200,000	
Appropriated to June 30, 1954	584,400	
Appropriated for fiscal year 1955	230,000	
Appropriated to date	814,400	26
Appropriated requested for fiscal year 1956	1,000,000	58
Balance to complete	1,335,600	

PHYSICAL DATA

Levees:

Average height: 10 feet (lakeshore levees); 8 feet (levees along Jefferson-Orleans and Jefferson-St. Charles Parish lines).

Length: 10.2 miles (lakeshore levees); 7.2 miles (parish lines levees).

STATUS (JAN. 1, 1955)

Levees and toe protection: 22 percent (Federal cost).

Completion schedule: 1960.

JUSTIFICATION

Destructive tides in Lake Pontchartrain occurred in the 1901 and 1915 hurricanes and were repeated in the 1947 hurricane. Since 1920, commercial, industrial, and residential development in the city of New Orleans has progressed steadily with a very rapid growth since 1940. This growth extended lakeward into reclaimed marshland and into the adjacent Jefferson Parish. During the hurricane of September 1947, excessive tides overtopped the Jefferson Parish lakeshore levees over much of their length and inundated the highly developed urban area of Metairie as well as pasture and other lands. This overtopping of the levees weakened them with the result that the crown elevation was reduced and a total length of 42,000 feet was crevassed or eroded away. Floodwaters in residential sections as far as 2½ miles from the lake were flooded to depths ranging up to 8 feet. Of the total 50 square-mile area in Jefferson Parish lying between Lake Pontchartrain and the Mississippi River (assessed value of $23 million (1947)), 39 square miles were inundated. The 3 pumping stations which normally remove the interior drainage were flooded and rendered inoperative, as were the parish incinerator and sewage disposal plant creating a serious health hazard to about 25,000 people. The Moisant International Airport was flooded and closed, urban busline operations interrupted, public schools made untenable, stocks of many mercantile establishments suffered water damage and the livestock of many dairy and poultry farms were destroyed. Two thousand homes were damaged, 800 families evacuated, and home furnishings, automobiles, and personal effects damaged or destroyed. The present population of the area is in excess of 65,000 and the assessed valuation exceeds $38 million.

Fiscal year 1956.—The requested amount of $1 million will be applied as follows:

Item A–1, "Levee topping to grade" (airline highway to lakeshore levee)	$63,700
Item B–1 and B–1A, "Shaping to project grade" (lakeshore levee)	89,200
Items B–1A and B–2, "Third lift hydraulic fill" (lakeshore levee)	627,700
"Levee slope and toe protection"	63,700
"Engineering and design"	64,700
"Supervision and administration"	91,000
Total	1,000,000

The amounts recommended above are required to essentially complete the lakeshore protection levee and hydraulic-fill embankment, and to provide protection for the levee toe along the most critical areas.

Mr. MARSHALL. We would like to have a statement from you, General Hardin, on this project.

General HARDIN. The Lake Pontchartrain project is in the vicinity of New Orleans in that region right adjacent to the densely populated metropolitan area of New Orleans.

It is a local flood-protection project which is designed to secure an area from hurricane flooding from Lake Pontchartrain.

There is a low levee along the shoreline of Lake Pontchartrain, to be protected against erosion effects of waves' action, and it has a substantial degree of local participation in it on account of the high degree of local benefits.

It is included in this project because it is still within the alluvial valley, and has the Mississippi River on one side and Lake Pontchartrain on the other.

The funds which are requested for fiscal year 1956 are for the purpose of continuing the project and this, again, is in an area where foundation conditions are particularly weak and only additions can be made to the embankments from time to time, as the soil consolidation will permit.

It is expected that we can top out some of the work which has been previously placed and add additional lifts to others, particularly on the lake shoreline, and to provide some toe protection to areas which are under rapid disintegration at the moment by wave action.

There will still remain about $1.3 million to complete it after the funds are provided which we have requested for fiscal year 1956.

Mr. MARSHALL. Are there any questions? If not, we shall proceed to the next item.

MAINTENANCE

The next item which we have for consideration is "Maintenance," and I note that it is handled a little differently than the other operations and maintenance budgets which have been presented to this subcommittee.

We will insert into the record at this point page 67 of the justification.

(The page referred to follows:)

MAINTENANCE

The work to be accomplished under this item consists of operation and ordinary maintenance, and rehabilitation of features that have been completed under the comprehensive plan since 1928 and on items where construction has advanced to the point where maintenance is required.

The Flood Control Act approved August 18, 1941, contained in subparagraph (g) under the title "Lower Mississippi River" the following proviso: "*Provided*, That funds hereafter expended for maintenance shall not be considered as reducing present remaining balance of authorization."

The budget estimate for fiscal year 1956 is as follows:

(*a*) Main stem	$11, 920, 000
(*b*) Off main stem	2, 780, 000
Total	14, 700, 000

The tentative allocations by projects are as follows:

Item	*Tentative allocation*
Main stem:	
Mississippi River levees	$2, 013, 000
Bank stabilization	5, 000, 000
Dredging	4, 000, 000
Surveys, gages, and observations	815, 000
Morganza structure	27, 000
Bonnet Carre Spillway	65, 000
Subtotal	11, 920, 000
Off main stem:	
St. Francis Basin	235, 000
White River backwater	44, 000
Arkansas River levees	38, 000
Red River backwater	100, 000
Yazoo Basin headwater	787, 000
South bank, Red River	10, 000
Lake Pontchartrain	0
Atchafalaya Basin Floodway	1, 566, 000
Subtotal	2, 780, 000
Grand total	14, 700, 000

Mr. MARSHALL. General Hardin, we would appreciate a statement on this item, and an explanation as to why this is budgeted differently than other maintenance expenses?

General HARDIN. The project for maintenance of the Mississippi River and tributary projects, has been historically provided on the basis that a certain sum would be necessary to do the things which were currently necessary on the river to prevent the loss of works which had been accomplished.

It is divided into two parts, the main stem and off main stem, but involves the work which the Mississippi River requires to be done, as a result of the unpredictable seasonal characteristics of the river.

Generally, the work is predicated upon the results of the previous winter, and spring runouts, before we can determine fully what work we have to maintain or to rehabilitate.

Of course, there is a part of this sum which within the last 5 or 10 years has been limited by general agreement to about $15 million. Some of those fixed sums are for such things as the surveys and gages and observations which, of course, are the life blood of a project of this kind.

Without a continuity of record, your tools with which you can forecast and develop the project, are extremely jeopardized if the records are not continuous.

We have a record of this river which goes back to 1820 in rather substantial fashion, but it is something which has to be kept up to date.

The levee work which we have itemized here as our expectancy of what we will have to spend is, of course, an estimate, based upon previous years' experience, and will not be fully crystallized until we see the effects of this spring runout. We have had high water down there the first time since 1951, and we had some places where the river got out of the banks. I have seen with my own eyes recently some damage from that runout in areas which will have to be treated. The levees in some places have been washed by excessive rainfall.

Sometimes we have cloudbursts which will cause damage to our levees. It is contemplated by the basic project that that kind of extraordinary maintenance will be taken care of by the Federal Government.

The item on bank stabilization has to do with maintaining the present concrete revetment in the river. The river attacks it constantly, of course, and it is not the kind of a permanent protection that you might find feasible if more money were spent on the undertaking.

The soil is leaching through the revetment and sometimes the upper and lower ends are attacked by the river currents, and we have to do something to repair them, and that sum on there is for the purpose of preventing a disintegration of work which has been placed in previous years.

The dredging is largely in the interest of navigation in order to maintain a 9-foot by 300-foot wide channel from Baton Rouge to Cairo, in accordance with the provisions of the project. The dredging is where the river builds sandbars in its meandering pattern, crossing over from one side of the river to the other, but not all of that dredging money is spent for actual dredging.

We have to carry on channel patrols, of course, to find out where these bars are forming, and to take the necessary steps to locate them. It is a constant problem of finding and removing the accumulated material.

Now, our problem is decreasing, as we improve this channel by the revetment program.

There is less and less of these depositions which we find it necessary to dredge out in order to keep the channel open, and then keep it from deteriorating.

One of the objectives of the bank stabilization program is to further reduce the maintenance problem in the river, and keeping it in a controlled state.

Mr. MARSHALL. What is the amount of your unobligated funds for this fiscal year, on this particular item?

If you do not have that information immediately available, please place it in the record, and also would you place in the record the amount which you have requested, and used for maintenance during the last 5 fiscal years?

General HARDIN. Yes, sir.

(The information requested follows:)

The estimated unobligated balance of maintenance funds on June 30, 1955, is $50,500 for M. R. & T.

The amount requested and used for maintenance during the last 5 years is shown in the following table:

Fiscal year	Requested	Expended [1]
1950	$14,850,000	$15,790,282
1951	14,447,900	13,088,747
1952	14,335,000	15,175,374
1953	14,827,000	16,673,452
1954	14,800,000	13,799,000

[1] The Flood Control Act approved Aug. 18, 1941, contains in par. (g) under the title "Lower Mississippi River" the following proviso: "*Provided*, That funds hereafter expended for maintenance shall not be considered as reducing present remaining balance of authorizations."

Operations and Maintenance

Mr. Marshall. The next item is operations and maintenance. A total of $3,879,600 is requested for fiscal year 1956.

We will include in the record the explanation and breakdown, by project, which appears on pages 81, 82, and 83 of the justifications.

(The pages referred to follow:)

Lower Mississippi Basin, Operations and Maintenance, General, Fiscal Year 1956

JUSTIFICATION OF ESTIMATE

1. Navigation

(*a*) *Channels and harbors.*—The work to be accomplished under this activity consists of maintaining the navigation channels and harbors of coastal harbors and waterways by means of dredging, operation of navigation structures, and repairing jetties and breakwaters; and periodic inspections and surveys to determine the condition of the projects for programing purposes and providing navigation interests with adequate information on existing channel conditions; all as authorized in the laws adopting river and harbor projects.

The budget estimate of $3,808,000 for fiscal year 1956 is required for essential maintenance work on 6 channel and harbor projects named in the list which follows. The projects listed have been subjected to an economic analysis and determined that continuing maintenance is justified. The amount of funds appropriated in recent years for this activity has not been sufficient to provide for the adequate and timely maintenance of all justified projects and has resulted in a substantial backlog of work, particularly structural repairs and the maintenance of moderate and shallow-draft navigation channels. This condition continues to exist.

Project	*Tentative allocation, fiscal year 1956*
Louisiana:	
Bayou La Loutre, St. Malo, and Ycloskey	$80,000
Gulf Intracoastal Waterway (New Orleans)	1,950,000
Mississippi River, Baton Rouge to Gulf	1,400,000
Removing water hyacinths	220,000
Waterway from Empire to Gulf	50,000
Tennessee: Wolf River	100,000
Condition surveys	8,000
Total channels and harbors	3,808,000

(*b*) *Locks, dams, reservoirs, and canals.*—The estimate of $42,000 for fiscal year 1956 provides for the operation and ordinary maintenance of the locks and dams, essential channel work, and the most urgent repair of the structures at two projects. The estimate contemplates operation of the projects with the utmost economy consistent with the importance of the waterways to the national economy.

Project	*Tentative allocation, fiscal year 1956*
Louisiana:	
Bayou Teche	$39,800
Waterway, Franklin to Mermentau River	2,200
Total locks, dams, reservoirs, and canals	42,000
Total navigation	3,850,000

2. Flood control

(*b*) *Other (including channel improvement projects, miscellaneous maintenance items and inspections).*—The budget estimate of $29,600 provides for the minimum requirement of regular maintenance of 3 local flood-protection projects, condition surveys, and inspection of completed works during fiscal year 1956. The estimate includes $1,000 for condition surveys to determine the extent of rehabilitation work necessary to place these projects in proper condition for transfer to local interests when legislation becomes available authorizing the termination of Federal responsibilities for their maintenance.

Project	Tentative allocation, fiscal year 1956
Louisiana: Bayou Teche and Vermillion River	$20,000
Mississippi:	
Big Black River	6,000
Homochitto River	2,000
Inspection of completed works	1,600
Total flood control	29,600
Grand total lower Mississippi Basin	3,879,600

OBLIGATIONS

Mr. MARSHALL. Will you place into the record the amount of money for this particular item which is unobligated for this fiscal year, and the sum which you have used in the last 5 fiscal years?

General HARDING. We shall be glad to do so, Mr. Chairman.

(The information requested follows:)

The amount of unobligated "Operation and maintenance," general funds in fiscal year 1955 for the projects referred to is shown in the following table:

Unobligated "Operation and maintenance", general funds, fiscal year 1955

	Actual as of Mar. 31, 1955	Estimated as of June 30, 1955
Navigation:		
Channels and harbors	$1,527,100	$1,400
Locks, dams, and canals	17,800	0
Flood control: Other	12,700	0

Funds obligated for operation and maintenance, General Lower Mississippi Basin, fiscal years 1952 through 1956

Fiscal year 1952, actual	$4,041,400
Fiscal year 1953, actual	4,090,600
Fiscal year 1954, actual	3,690,700
Fiscal year 1955, estimated	3,828,900
Fiscal year 1956, estimated	3,917,900
Budget estimate, fiscal year 1956	3,879,600

Mr. MARSHALL. Do you have any comments which you wish to make on this last item, General?

General HARDIN. I would like to introduce Mr. Gurnee, from the Office of the Chief of Engineers, who is prepared to explain the justification for the operations and maintenance request items which are in a part of the Mississippi River and tributary projects, but are parts of other developments in that region, tied in primarily with the navigation aspects.

Mr. MARSHALL. We shall be glad to hear from Mr. Gurnee at this time.

Mr. GURNEE. Mr. Chairman, I have no general statement to make, but I shall be happy to answer any questions which you might have.

Mr. BOLAND. All of the money requested is required for the operation and maintenance of these particular projects, is that right?

Mr. GURNEE. That is correct, sir.

Mr. BOLAND. Is this the total amount which you requested, or did the Bureau of the Budget cut this item?

Mr. GURNEE. This is not the total amount which we asked for.

Mr. BOLAND. How much did you request of the Bureau of the Budget?

Mr. GURNEE. I have it only by the individual items, and not by the total, sir, but I would be happy to add the total.

Mr. BOLAND. Will you insert the total in the record?

Mr. GURNEE. Yes, sir.

(The information requested follows:)

The original budget submission for this basin for fiscal year 1955 totaled $3,661,000. The total amounts requested and those allowed by the Bureau of the Budget for all river basins, exclusive of emergency funds, were substantially equal to the amount actually allotted, $76,110,000. The amount of $3,713,000 has actually been allocated to this basin in fiscal year 1955 to date, representing an overall increase rather than a decrease. Several projects have been reduced by 10 percent or more, with offsetting increases on other projects.

Mr. MARSHALL. Thank you. This concludes our hearing.

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